VOL. XL. No. 11 NOVEMBER 1955

MECCANO MAGAZINE

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1/-

DINKY TOYS

TRADE MARK REGD.

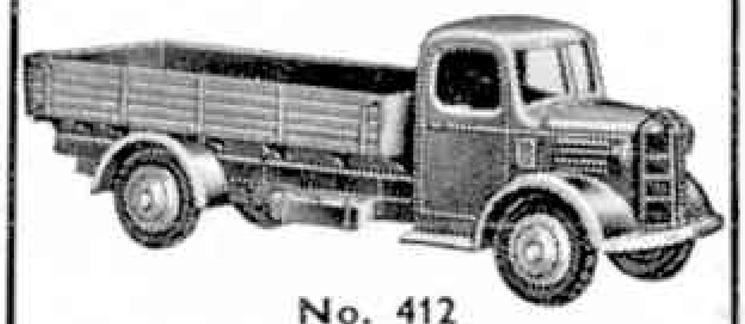
No. 471
Austin Van 'Nestle's'
Length 3½ in. **2/9**

No. 781
Petrol Pump Station ESSO
Length 4½ in. **4/11**

No. 734
Vickers Supermarine Swift Fighter
Wing Span 2 in.
Length 2½ in. **2/–**

No. 420
Leyland Forward Control Lorry
Length 4¼ in. **2/6**

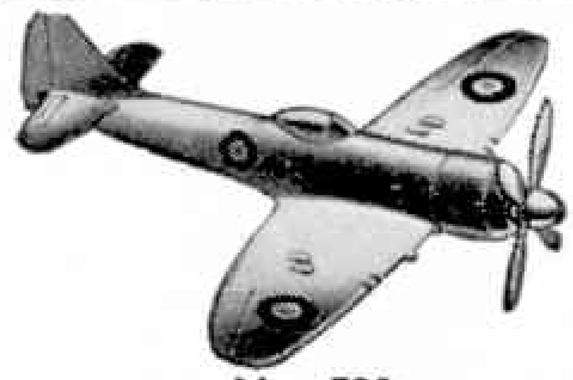
No. 451
Trojan 15-cwt. Van 'Dunlop'
Length 3⅜ in. **2/6**



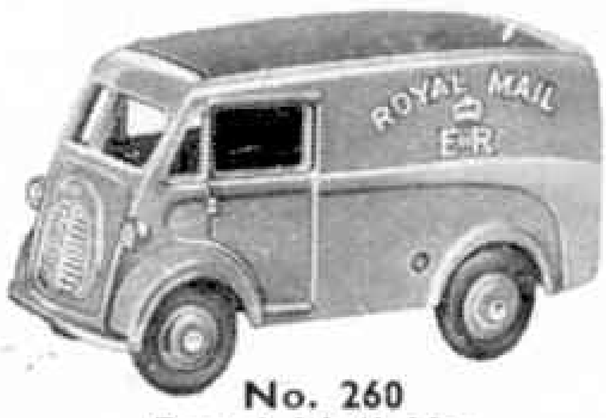
No. 412
Austin Wagon
Length 4⅛ in. **2/9**

No. 692
5.5 Medium Gun
Length 5⅛ in. **3/4**

No. 481
Bedford 10-cwt. Van 'Ovaltine'
Length 3¼ in. **2/9**



No. 730
Tempest II Fighter
Wing Span 2½ in. Length 3¼ in. **9d.**



No. 260
Royal Mail Van
Length 3⅛ in. **3/–**

No. 158
Riley Saloon
Length 3⅝ in. **2/4**

No. 290
Double Deck Bus
Length 4 in. **4/–**

No. 255
Mersey Tunnel Police Van
Length 2⅞ in. **2/9**

No. 222
Streamlined Racing Car
Length 5 in. **2/4**

No. 400
B.E.V. Electric Truck
Length 3⅜ in. **2/11**

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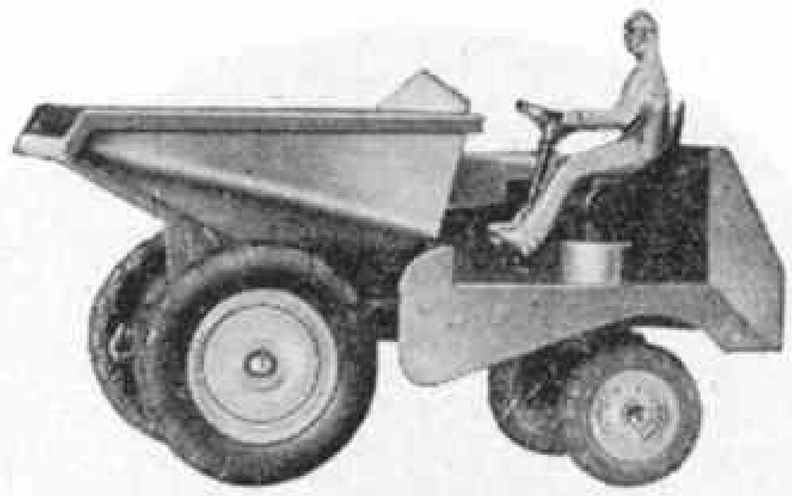
DINKY SUPERTOYS

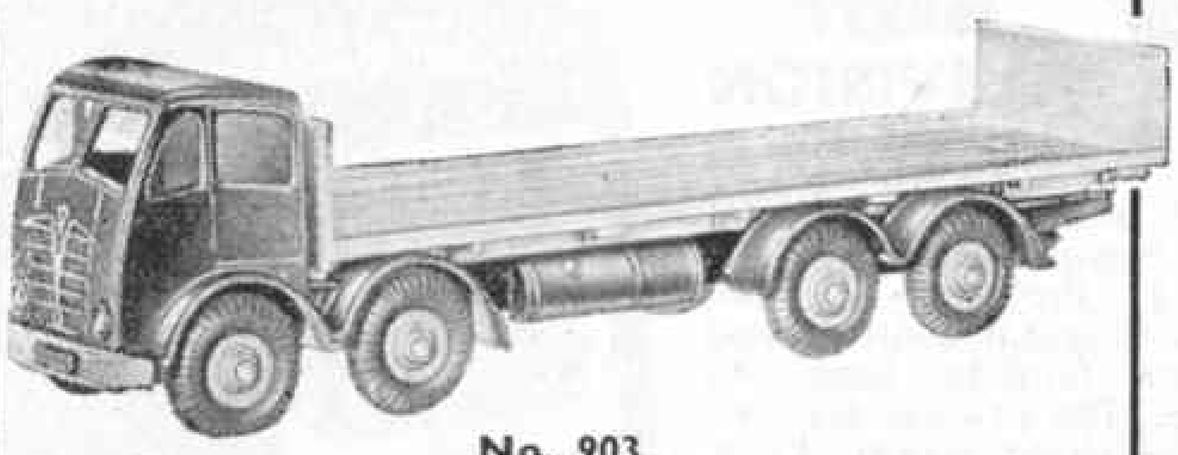
No. 972
20-Ton Lorry-Mounted Crane 'Coles'
Length 9⅝ in. **17/6**

No. 965
Euclid Rear Dump Truck
Length 5⅛ in. **8/11**

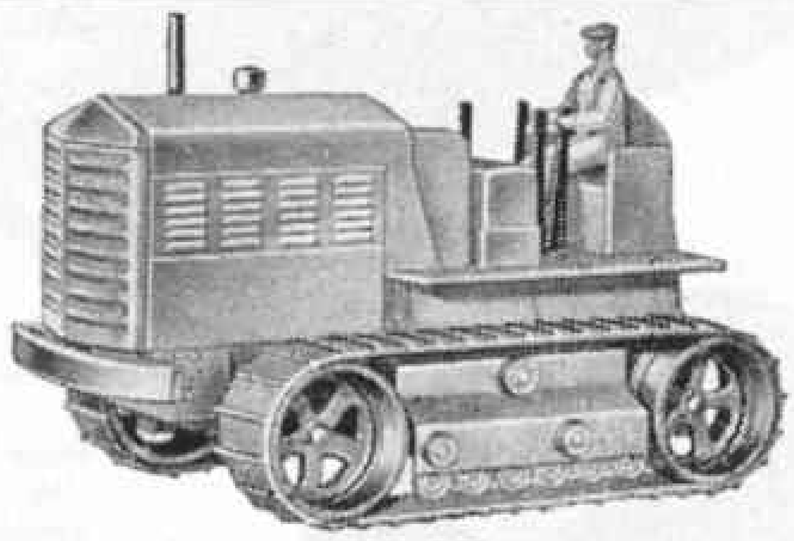
No. 999
D.H. Comet Airliner
Wing Span 7¼ in. Length 5¾ in. **7/3**



No. 962
Muir-Hill Dumper Truck
Length 4 3/16 in. **7/-**



No. 903
Foden Flat Truck with Tailboard
Length 7⅜ in. **7/3**



No. 963
Blaw Knox Heavy Tractor
Length 4⅝ in **7/9**

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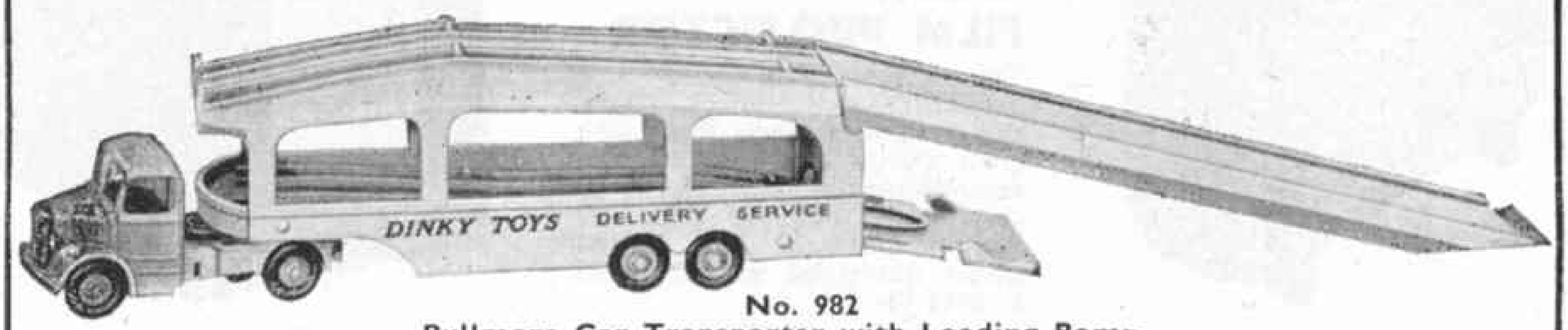

No. 982
Pullmore Car Transporter with Loading Ramp
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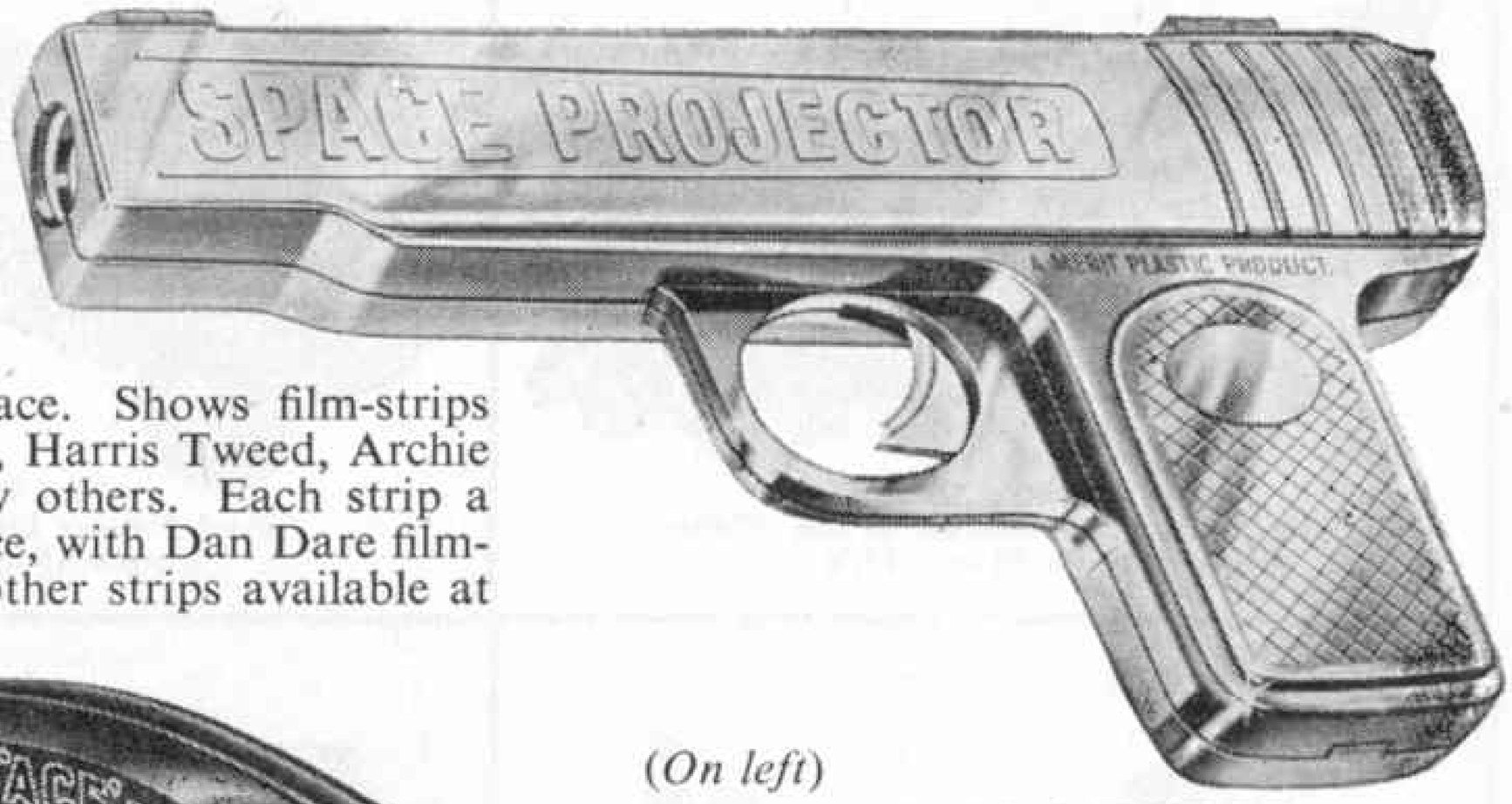

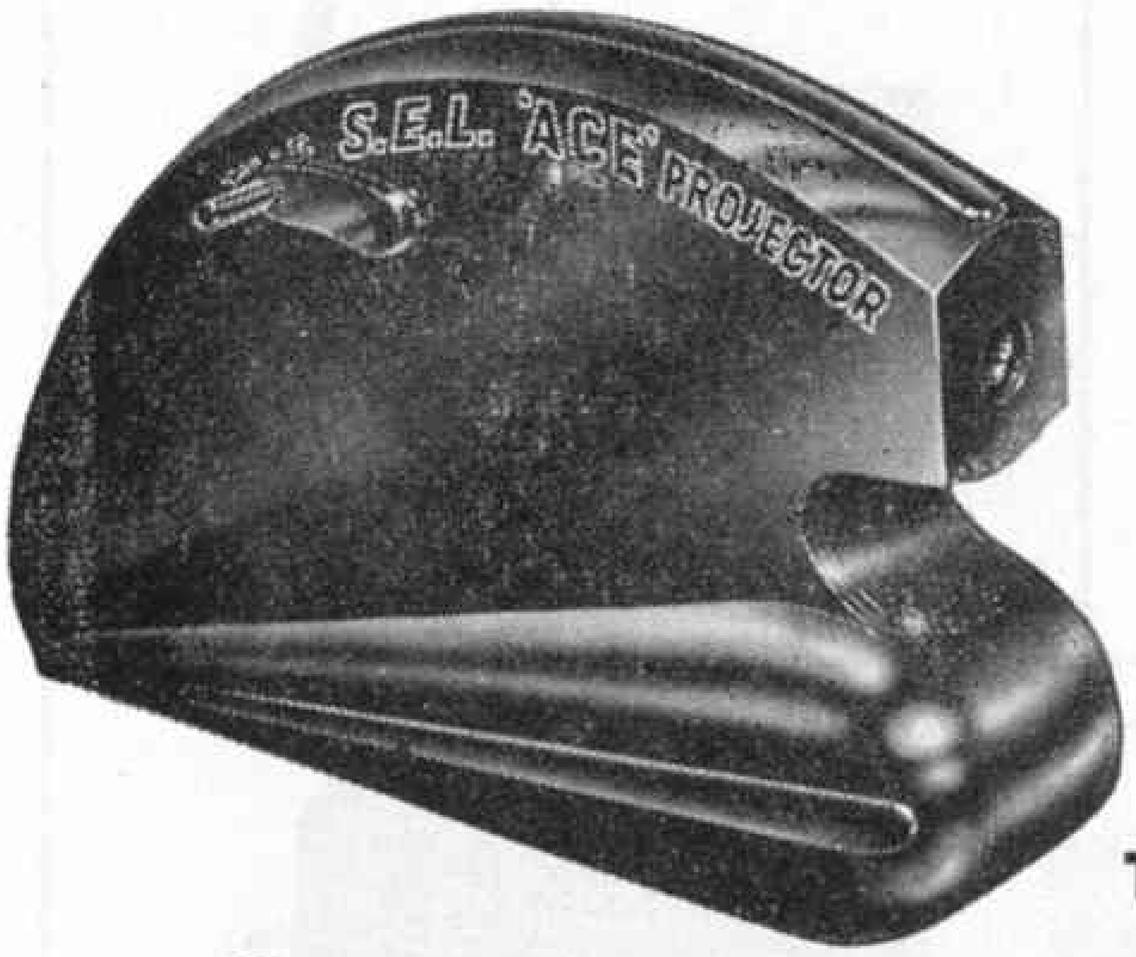

(On left)

S.E.L. ACE PROJECTOR

An exceptionally fine and beautifully designed projector, using any 16 mm. film. Projects pictures up to 12 in. wide on to any smooth light coloured surface. Film-strips available include adventures of Dan Dare, Archie Andrews, Billie Bunter. Price, with one film-strip, **13/6.** Many others available at 3 for **2/11.**

(On right)

'MERIT' TELEVISION VIEWER

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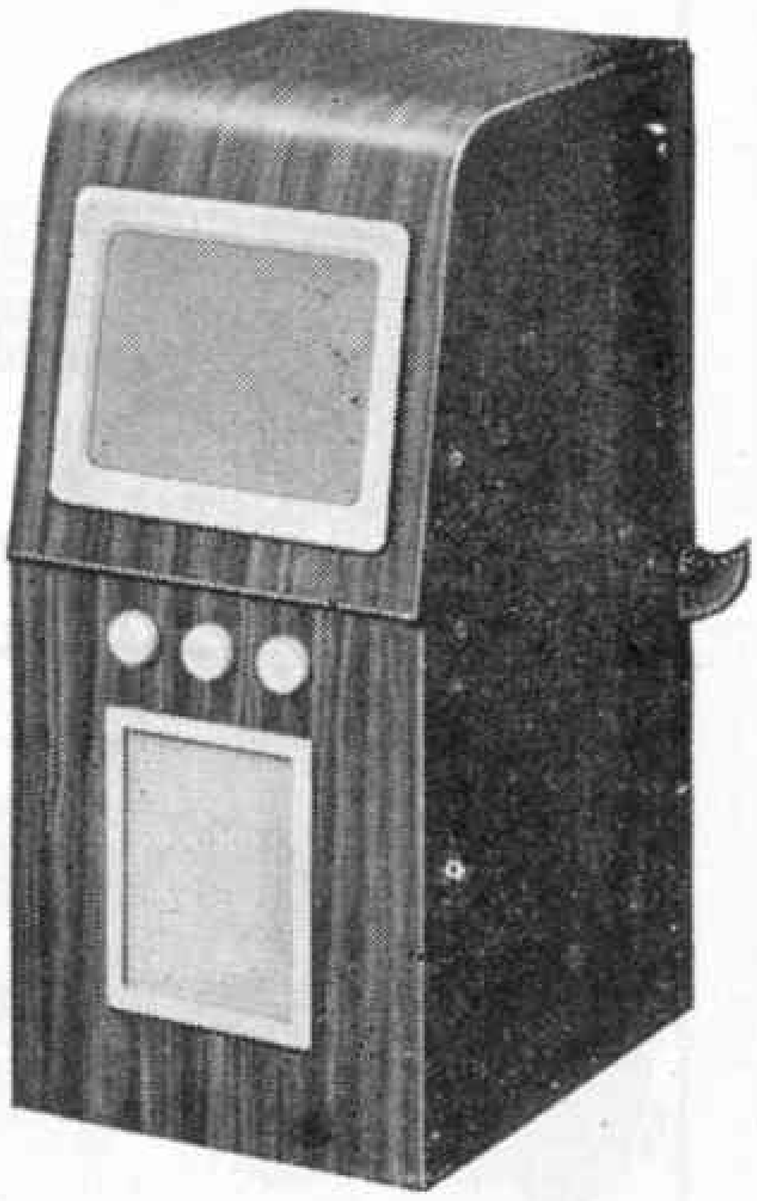

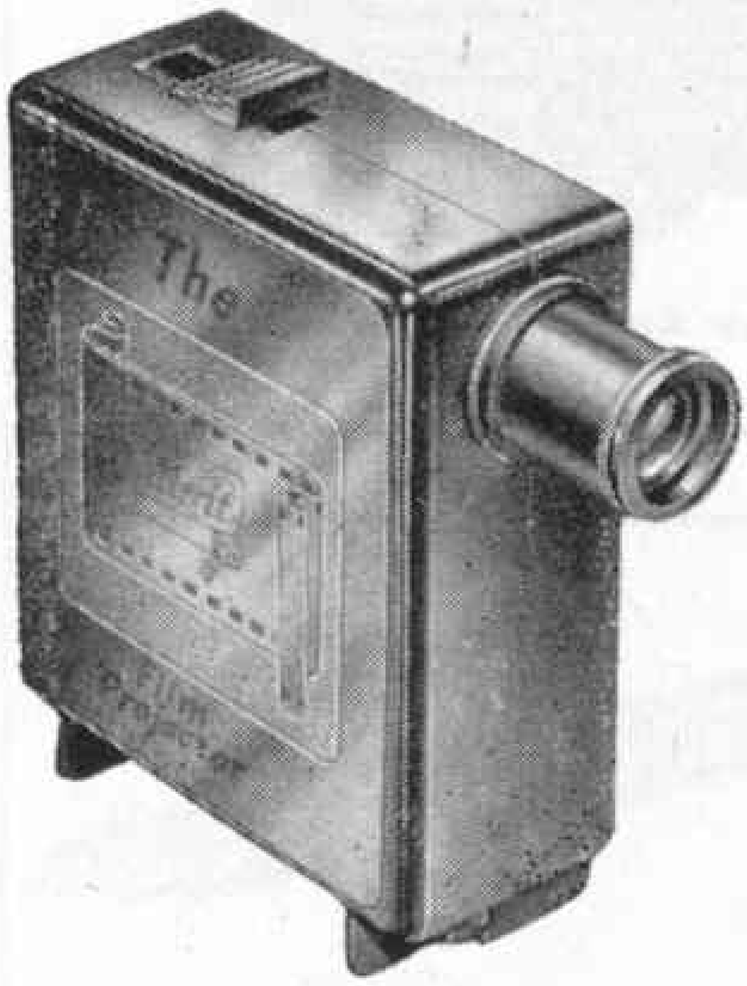

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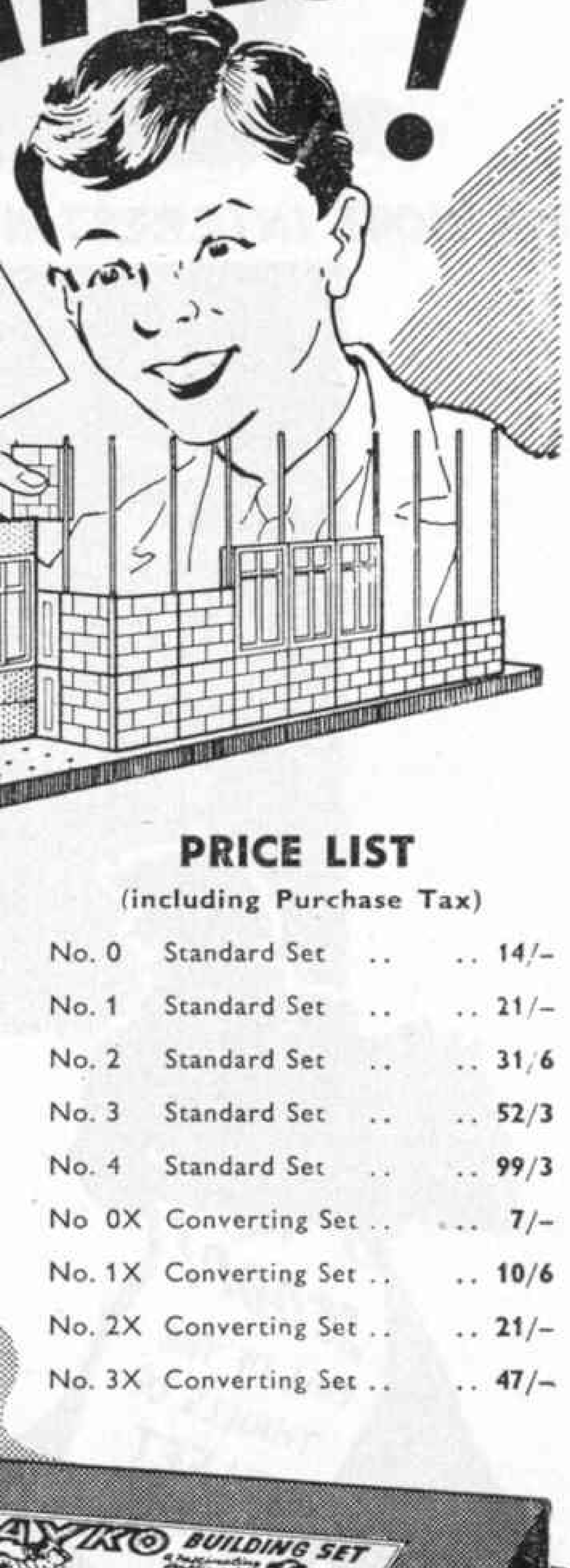

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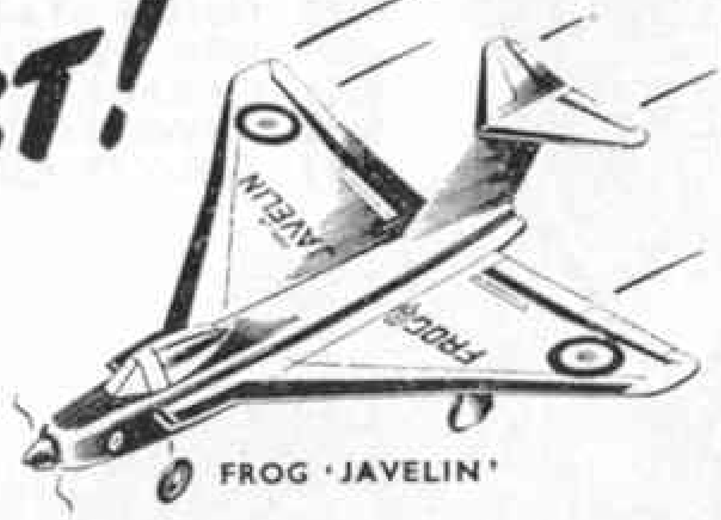
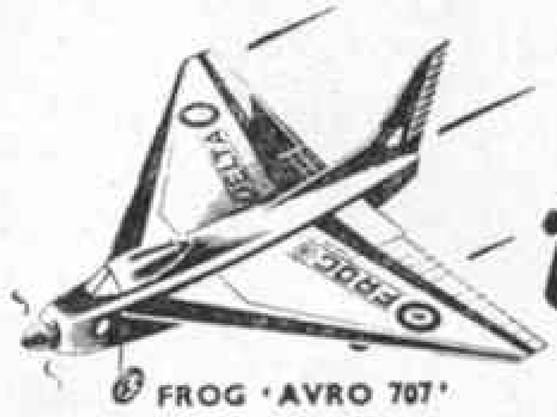


FROG 'JAVELIN'



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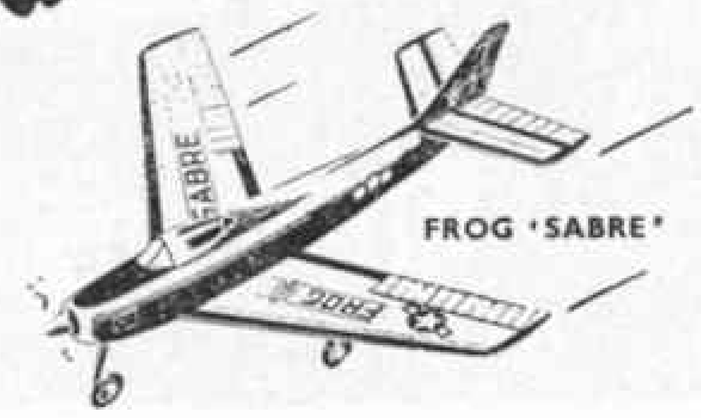
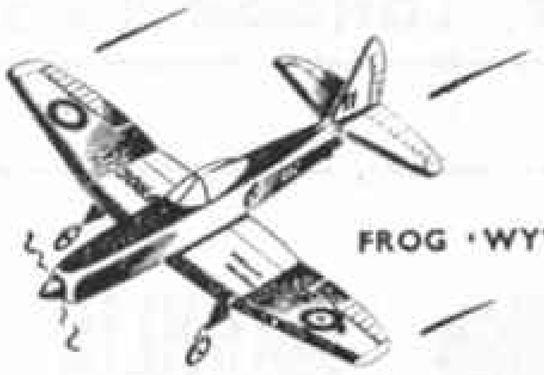
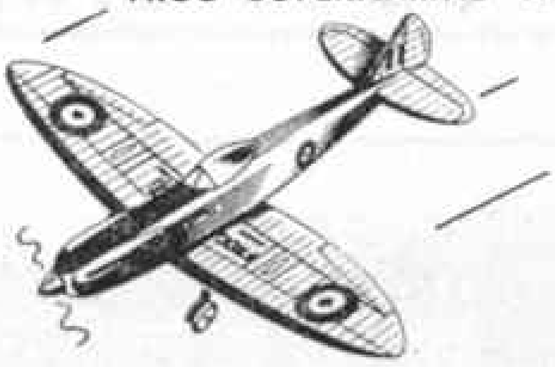


FROG 'SABRE'



FROG 'WYVERN'



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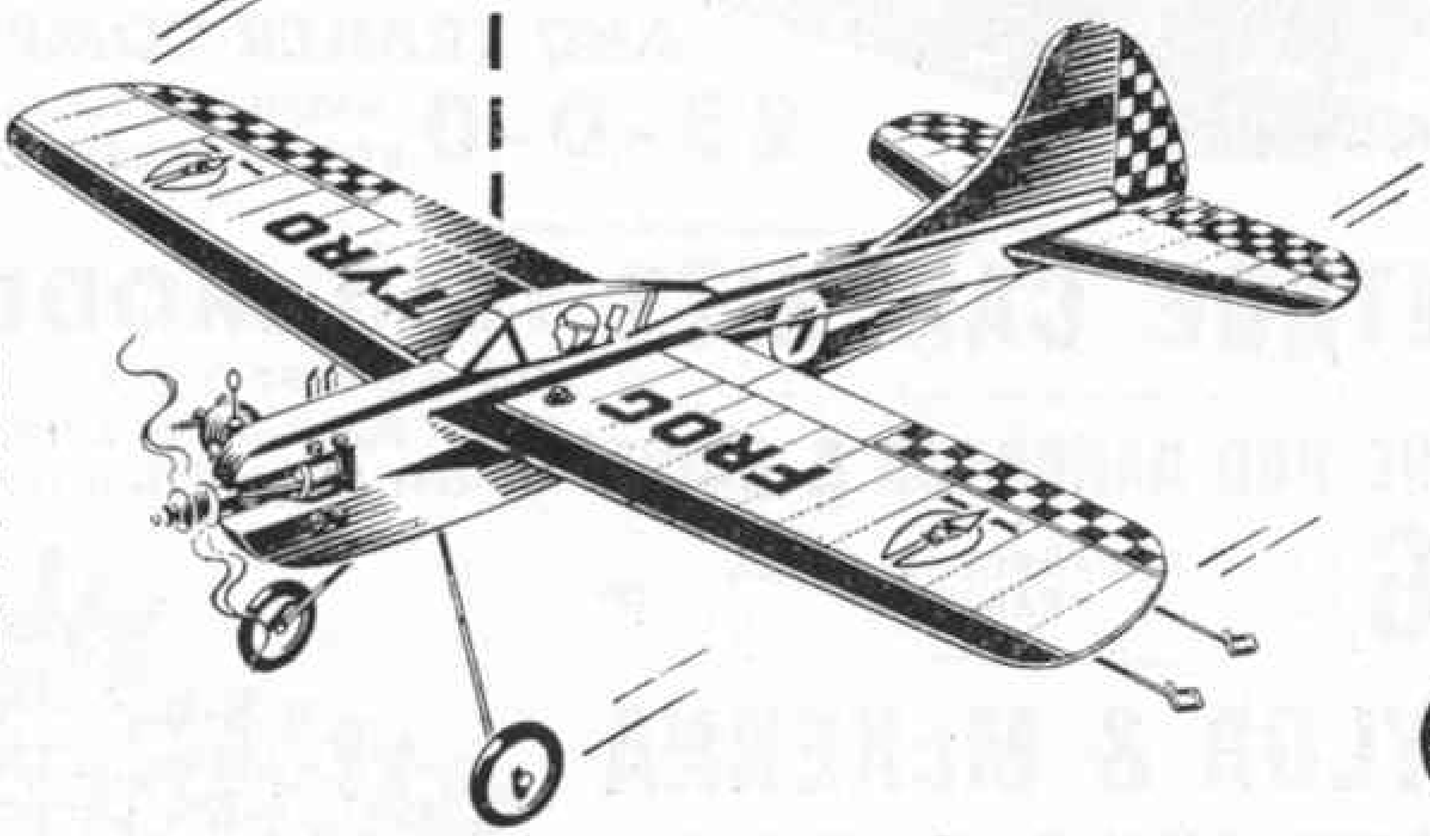

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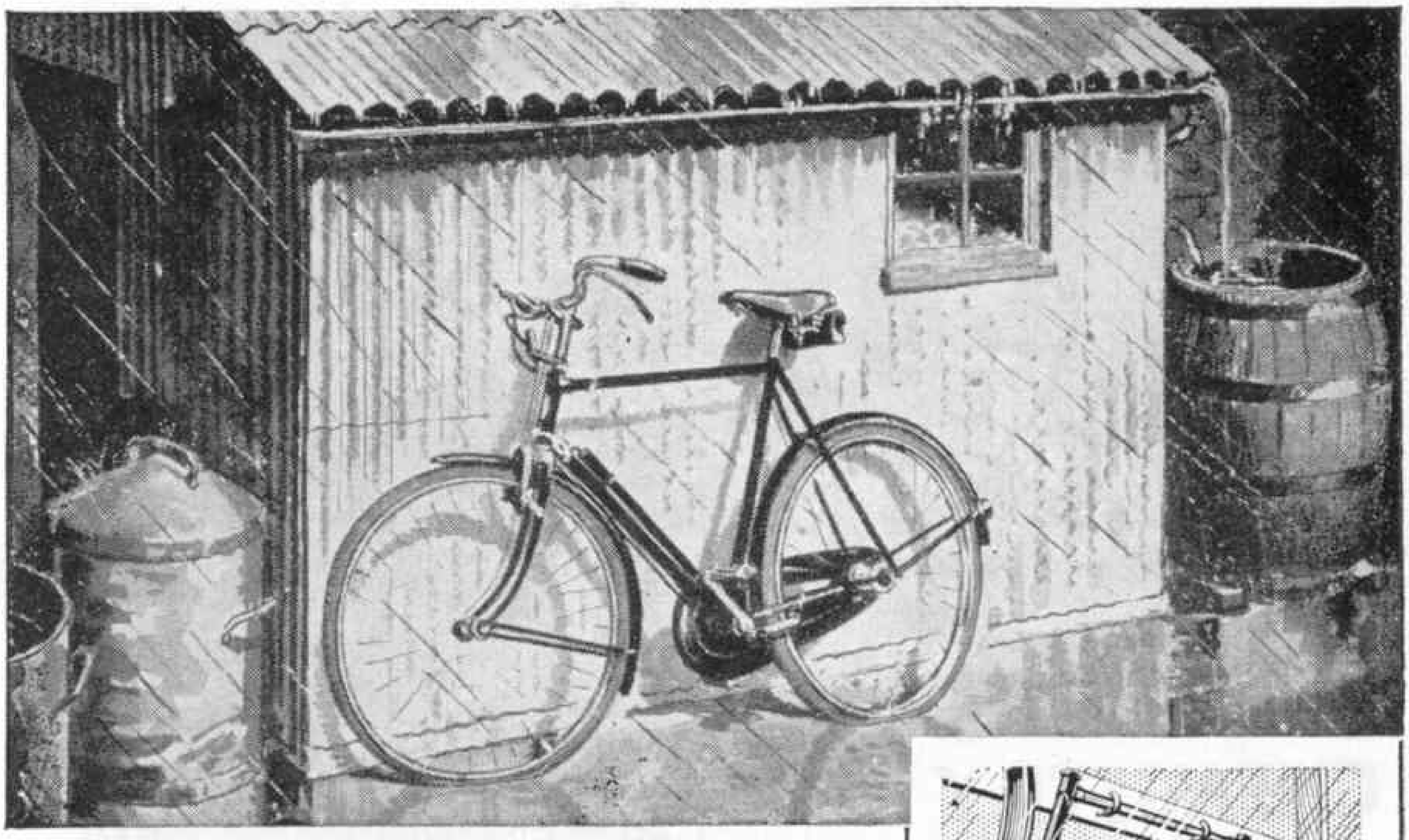

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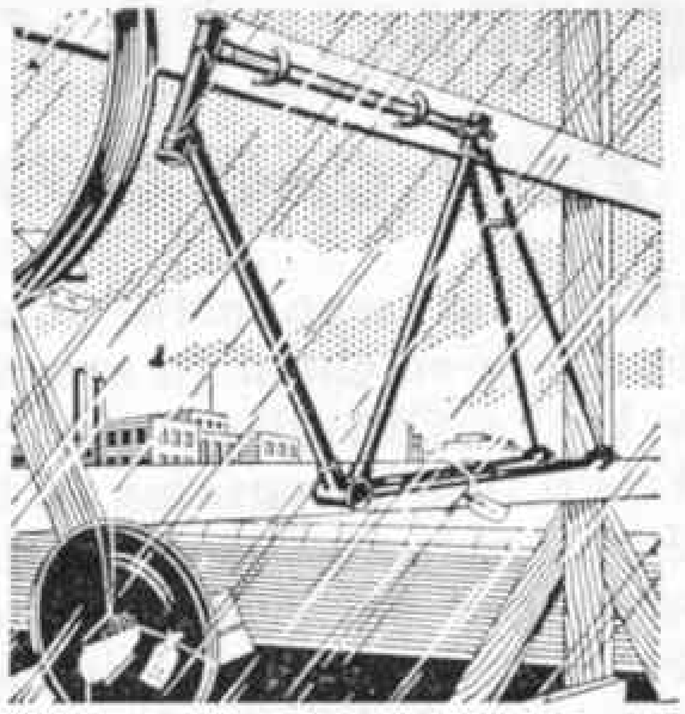

All the enamelled Triumph parts on the roof of the factory where they remained for over a year!

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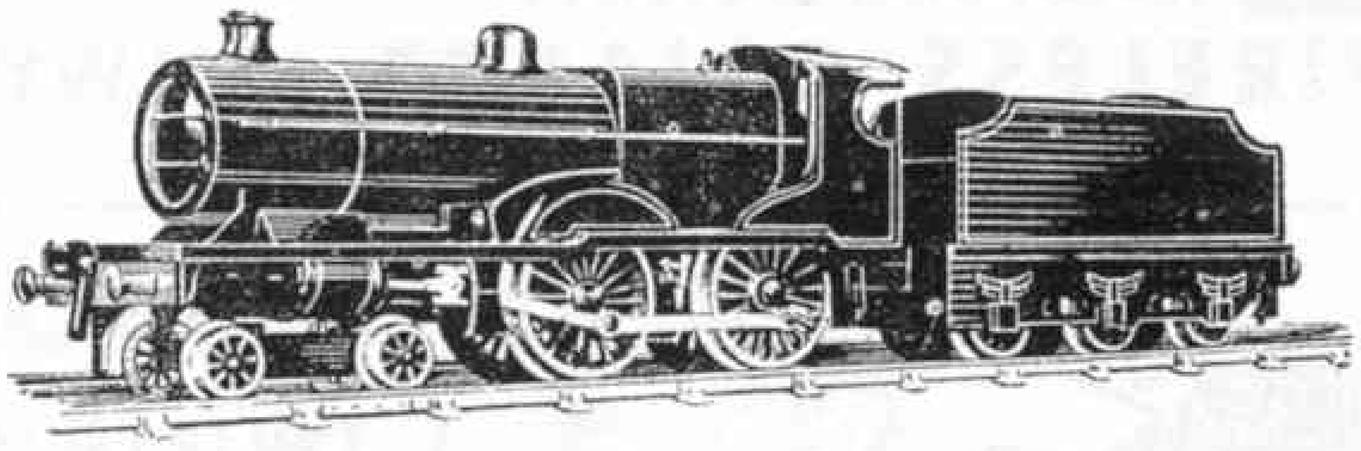

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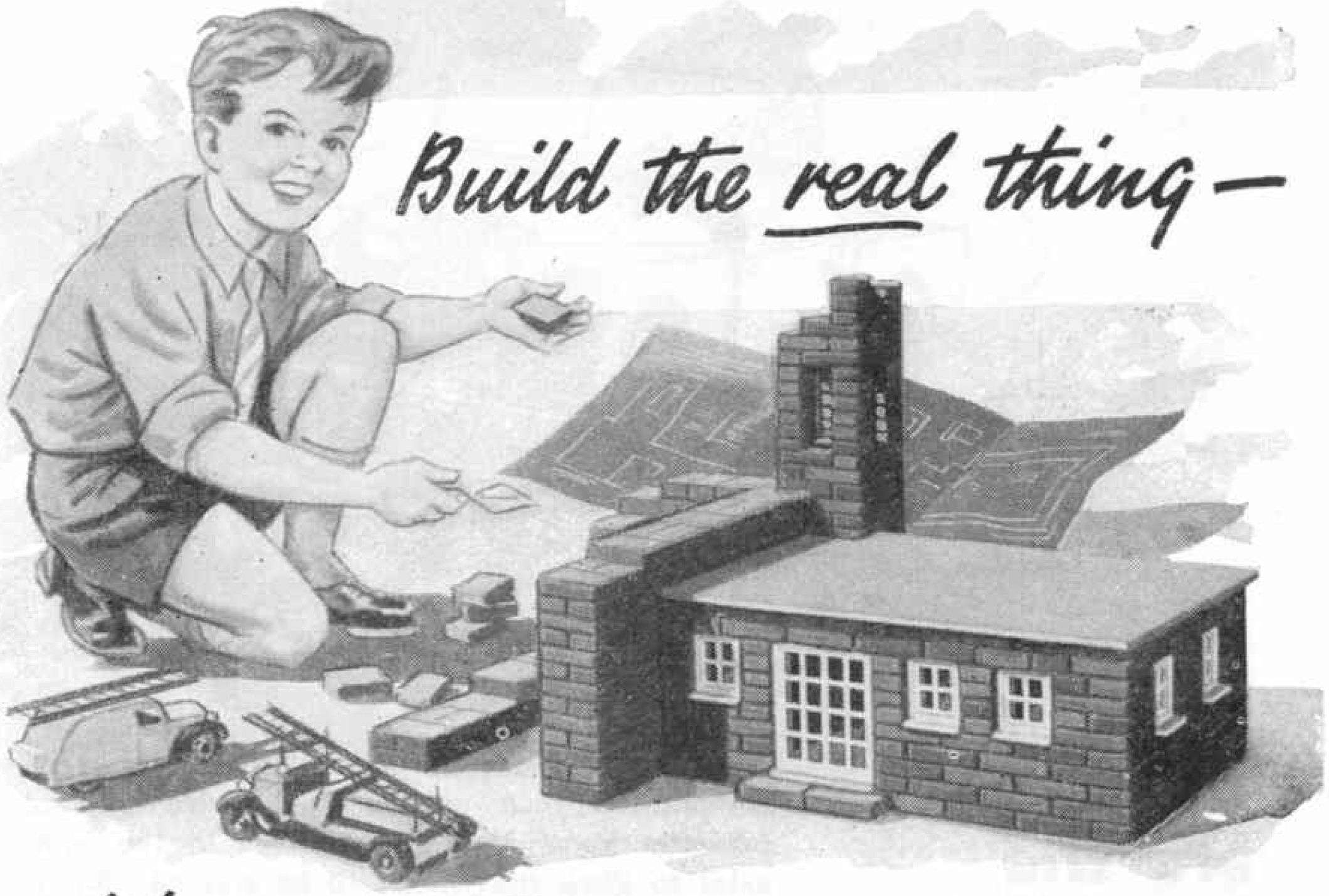

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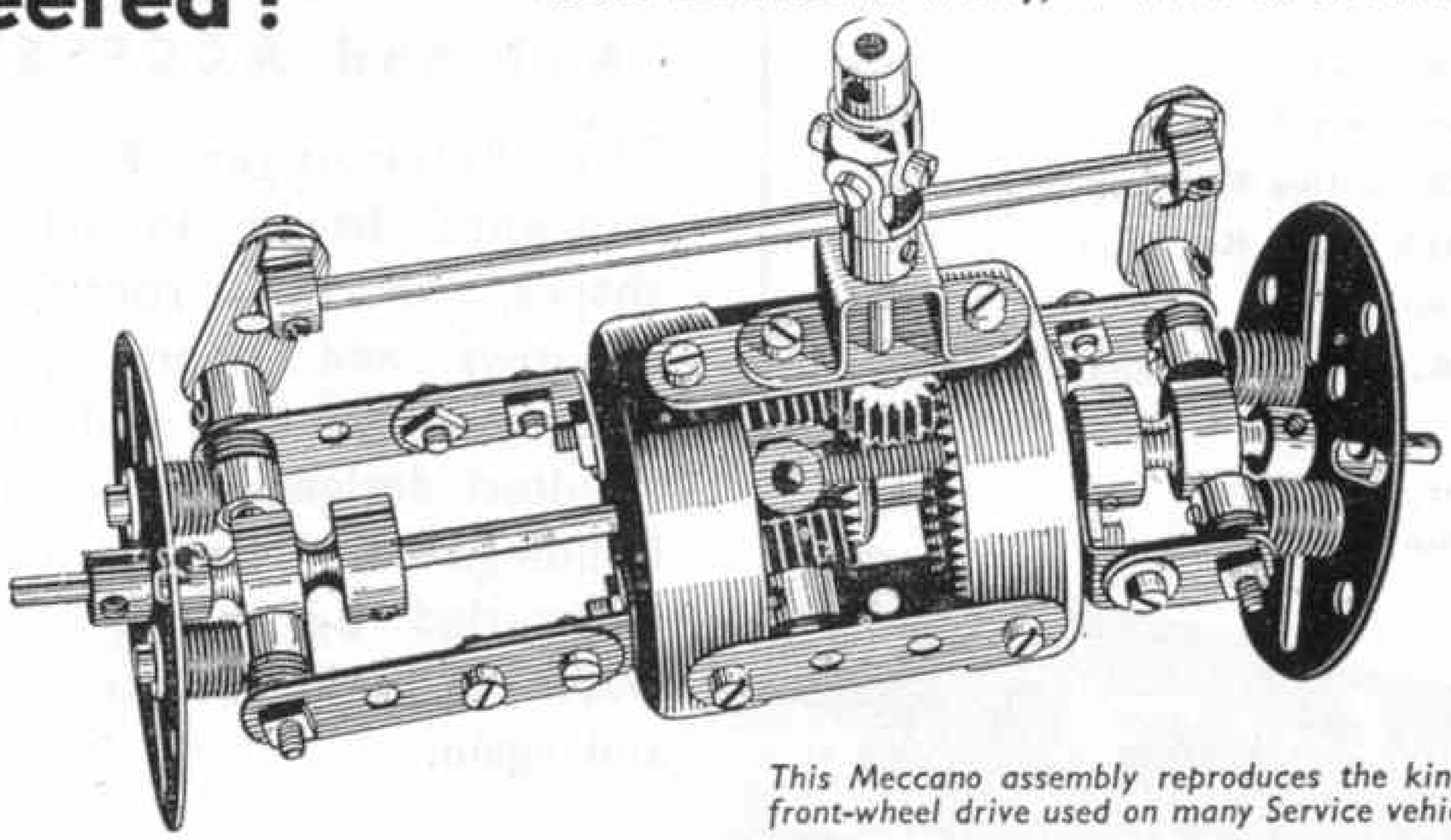
Ask any Meccano dealer for the new coloured folder about the Meccano hobby, or write to Meccano Ltd.



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MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XL
No. 11
November 1955

Winter and Summer in One Issue

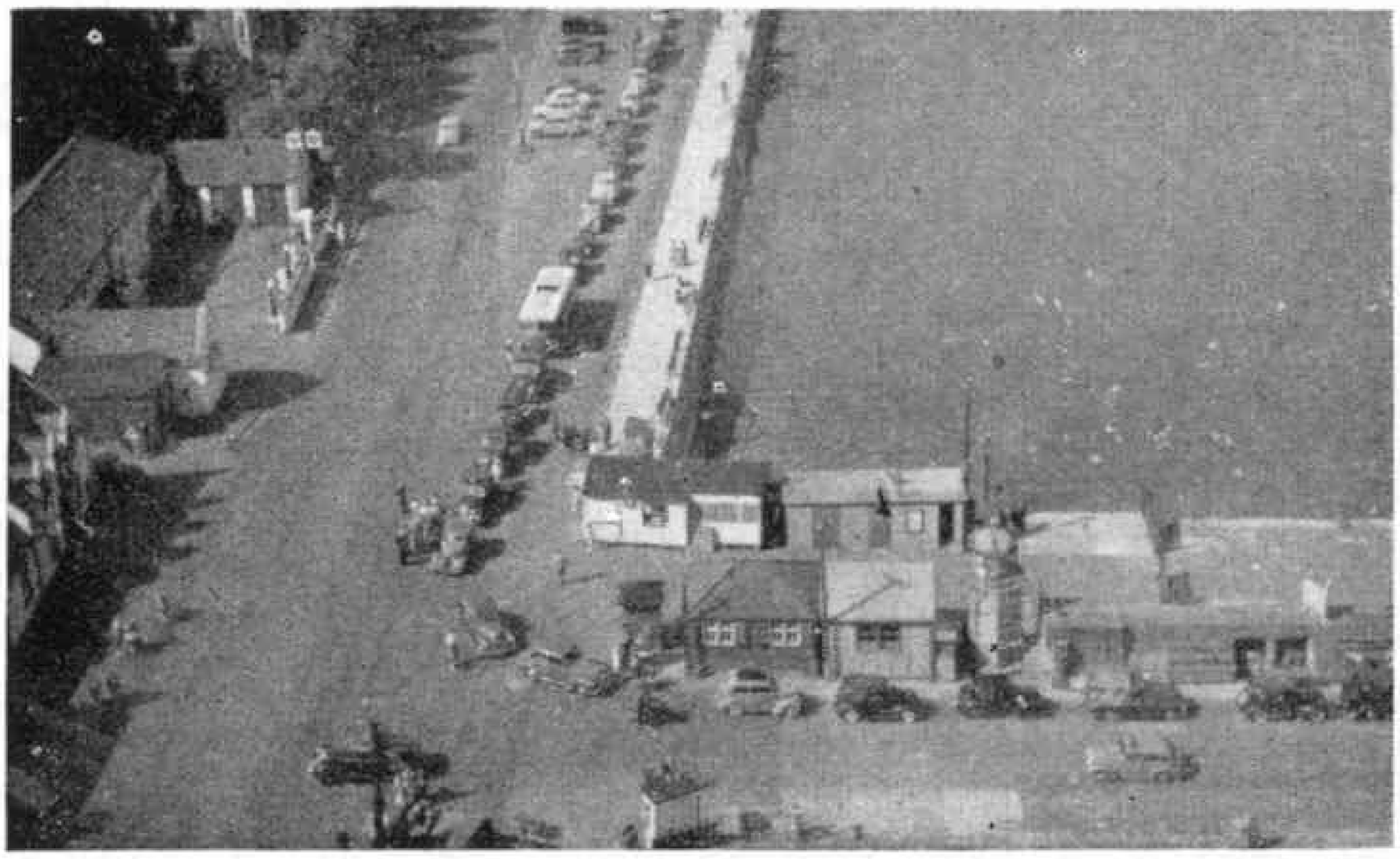
At this time of the year it begins to appear a little difficult to provide a Magazine that will suit readers in the summer of the southern hemisphere as well as those who live in northern areas, where we are now steadily moving into the depths of winter. This is because the Magazine travels all round the world, and what may be seasonable for a reader living in one country is entirely unseasonable for one in another. Fortunately Christmas is Christmas all the world over, so that any contributions to next month's special issue of the *M.M.* that have any connection with Christmas will be welcome everywhere.

Every reader will see at a glance when the next issue of the *M.M.* appears that it marks the Christmas season, for the cover will show them a gigantic holly tree, one that has become famous throughout the United States. It is owned by a railway, the Baltimore and Ohio Railroad, the officials of which have gone to great lengths to preserve it for the benefit of passengers in main line trains running through Maryland, who can see it through the coach windows.

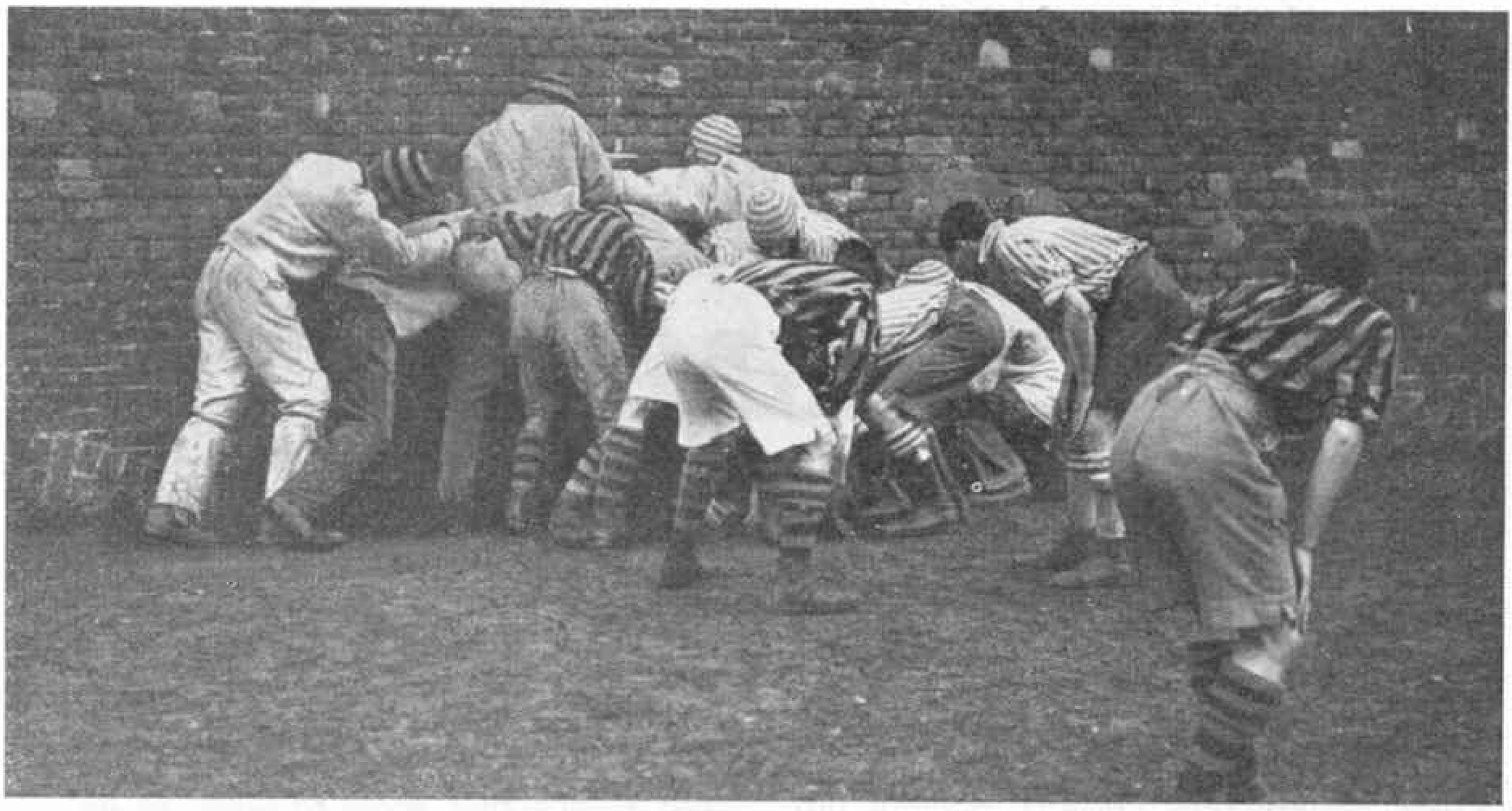
Many readers in countries in the tropics and in the southern hemisphere have told me that they take special delight in wintry affairs, especially when snow is involved. When the Christmas issue appears they will be enjoying summer weather anyway, so articles on reindeer and horses that have to wear snowshoes for their ordinary day-to-day work will perhaps make a special appeal to them. By contrast, for those in Great Britain and Ireland, where winter is taking a firmer grip on the land, I expect to include a vivid description of bird watching in the Australian bush, with perhaps another nature article, to remind them of happy summer days.

But northern readers too can enjoy the snowy sections, and others no doubt will turn with pleasure to summer studies.

The Editor



Do you recognise this scene? A well known ferry is associated with it. Photograph by J. Wyndham.



A bully in the Wall Game at Eton.

The Wall Game at Eton

Is This Britain's Muddiest Game?

By Leslie E. Wells

OF all the games played in Britain the strangest must surely be the Wall Game, which takes place every year at Eton College between the Collegers and Oppidans on 30th November, St. Andrew's Day. This year's contest will be the 114th.

Apart from being the oddest and most bewildering of games, it is also perhaps the muddiest. Every player invariably becomes covered in mud, as the pitch at the time of year is usually waterlogged. Indeed, if a mud-pack makes for beauty, then there are some very handsome young men at Eton after St. Andrew's Day!

The Collegers, or scholar-boarders, live in the original boys' quarters situated on the north side of the College, and number 70. Outside this nucleus are the newer parts of the school, including 25 boarding houses that accommodate about a thousand Oppidans or town-boarders—boys other than scholars.

The Wall itself is a 100-yard long, well built twenty foot high wall of red brick, with a stone coping, running parallel with the Windsor-Slough Road. It was built in 1717, but not for the game; it seems this grew from the wall.

The teams who play this annual game-cum-mudlark are chosen from the seventy Collegers and from nearly a thousand Oppidans. The chances of victory seem to be in the main equal, despite the fact that the Collegers have more opportunity of playing the game during the whole of their term—usually about six years—at Eton. Very few Oppidans play at all within two years of leaving school. However, the present state of the game is that Oppidans lead with 37 victories to the Collegers 32. Forty-four games have been drawn. Goals are rare. The last one was scored 46 years ago in 1909, and only three have been scored in a hundred years!

Rules for the Wall Game were first drawn up in 1849, possibly to reduce the number of abrasions and bruises light-heartedly collected and dispensed by excited Etonians. Revisions were made in 1862, 1871 and again in 1953, when the Keepers of the Wall decided, in view of the fewness of goals, that future teams will be 10-a-side instead of eleven. This semi-sensational decision was taken by the College authorities with the sole object of increasing the tempo of the game. By dropping one defensive player from each side the Keepers of the Wall hope they are opening the way for more attacking play—and more goals.

The action in a Wall game is as different from any other form of football as it is

possible to imagine. To the uninitiated it is full of intricacies and difficult to follow.

The pitch is a narrow strip of ground, about 115 yards long and twenty-feet wide, marked by a white line running parallel to the wall. The goals are a door leading to the master's garden and part of an old elm tree marked with white lines. At either end another white line marks out an area called a "calx," that at one end being called "good calx" and that at the other "bad calx."

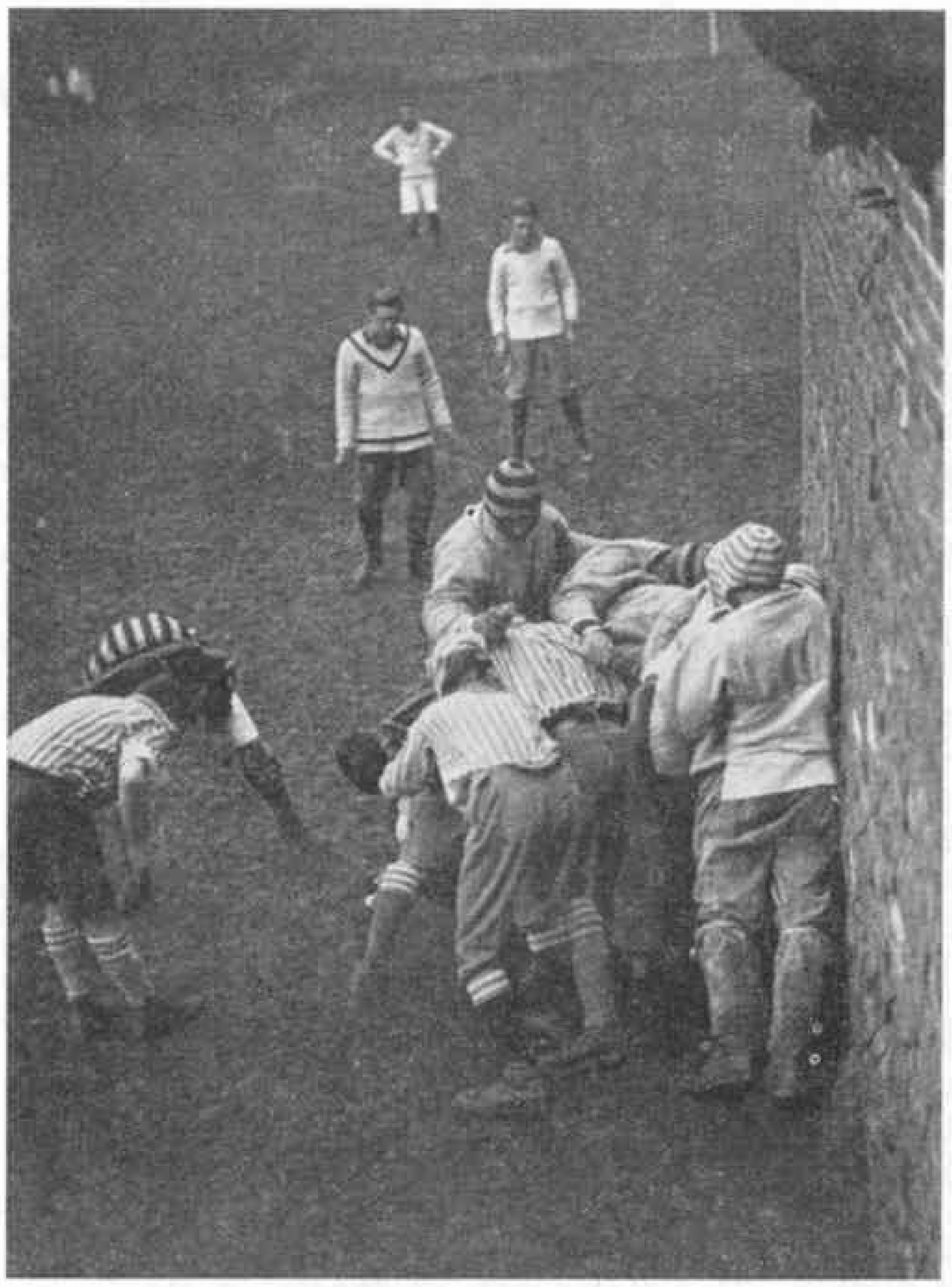
The main idea of the game is to get the ball into your opponents' calx by a series of bullies. A "bully" looks rather like a Rugby "scrum." The first "wall" on one side bends down close to the Wall, shielding his head with an outstretched arm. The first "wall" on the other side, standing opposite, bends over him. The other "walls" form behind their leaders, and, next to them, away from the Wall, form the "seconds," two on each side, who also wear head coverings. This is the "bully" proper. Three more men on each side, known as "third," "fourth" and "line," stand parallel with the "bully," "third" being nearest to it and "line" farthest away. Finally come others at different distances from the "bully"—"flying-man," "short" and "long." The ball is about half the size of an Association ball.

At exactly five minutes to twelve the game begins with the umpire rolling the ball into the waiting "bully." When the ball comes out of the "bully," the "outsiders" or anyone else try to kick it out as far towards the opposing calx as possible. The "bully" is then reformed, opposite the spot where the ball stops. Nothing can happen until the ball gets into calx, when the attacking side attempt to score "shies" by getting the ball off the ground and against the Wall, with an outside foot beneath it, and touching it with a hand. Then follows a try for goal by throwing, and a goal can also be scored by a kick from the field.

When the ball is in a "shy" scoring position it is the job of the other side to get it out from behind and kick it away, if in "good calx," or to touch it behind the back line if in "bad calx."

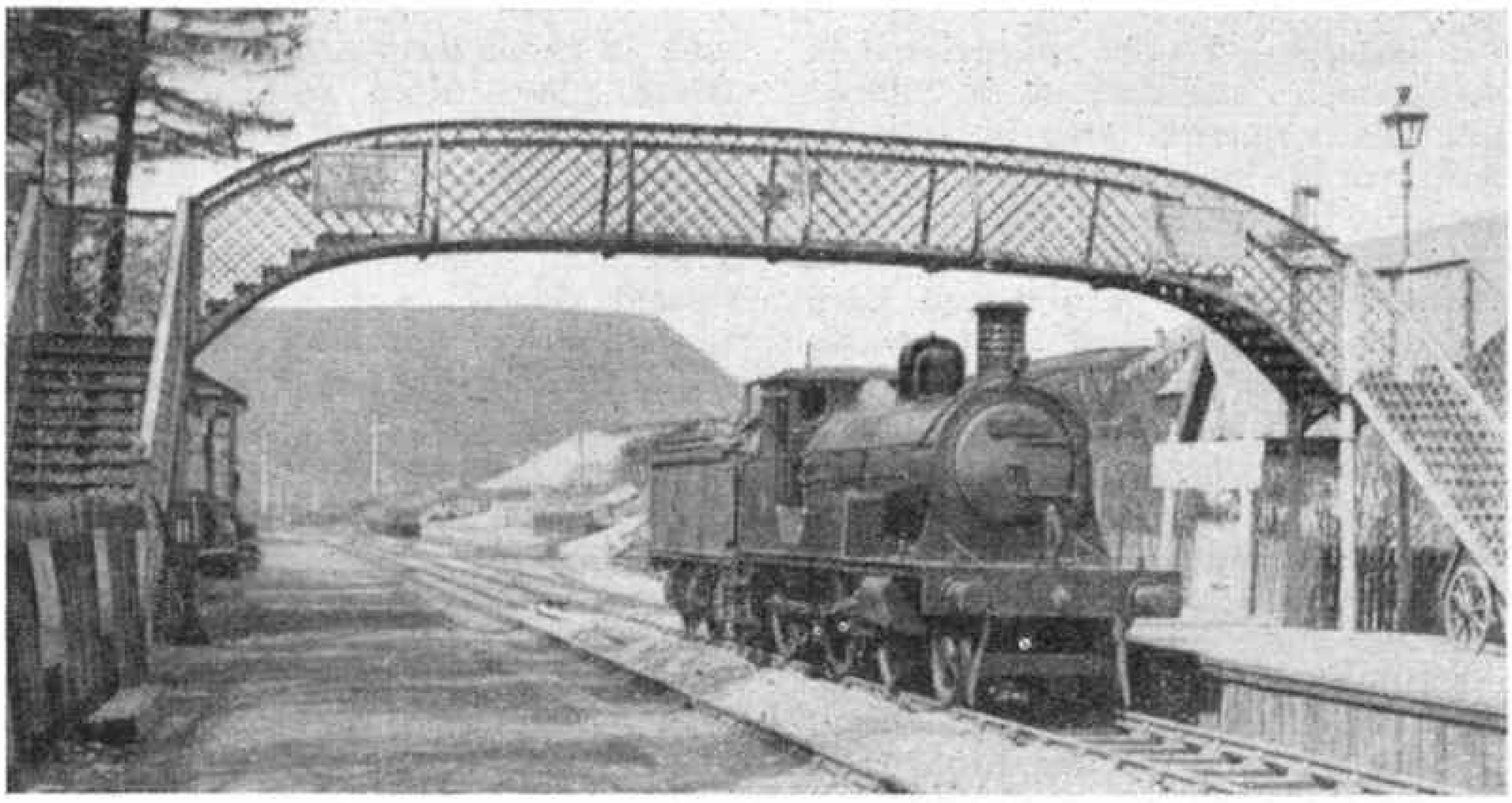
Despite its quaint terms and apparent intricacies the game in its present form does not appear to be of great age. The earliest record of any regular game is at the beginning of the nineteenth century, and in those days anyone who wanted to could play, often resulting in sides of between eighteen and twenty. At the time it was practically the only kind of football popular at Eton, though occasionally something similar to the more modern "Field Game" was played in the open. Such forms of relaxation were frowned upon by the masters. Nevertheless, on a piece of ground the "Lower Club"—the Collegers up till about 1863—played "Lower College," a form of football which was probably an early link between the field and wall games, for it had such terms as "bullies" and "shies." The Wall Game of earlier times was played on a much wider strip of ground than at present.

After the game "mixed" or "school" wall colours are given to six of the winning team and five of the losers.



Looking down on a bully from the Wall.

The players, after a much-needed shower, then go to lunch, where another traditional ceremony takes place. The housemaster in College takes up a special loving cup and drinks to the toast "*In piam memoriam* J.K.S." J.K.S. was J. K. Stevens, captain of the College Wall team 1876 to 1877 and the first scientific Wall Game player.



The Highland Railway Centenary

By G. H. Robin

THE former Highland Railway, whose centenary falls this month, was perhaps the most popular of the five major Scottish pre-grouping Companies. Running as it did through some of the grandest and highest mountain ranges in Scotland, it was certainly the most attractive to tourists.

The first railway sanctioned in the Highlands was the Inverness and Nairn, opened in November 1855. This became part of the Highland Railway when it was formed later and that is why the Highland Centenary is being celebrated this month. As the Inverness and Aberdeen Junction Railway, the line was later extended as far as Keith, where the Great North of Scotland Company took charge to Aberdeen.

In the following year the Perth and Dunkeld Railway was opened from Stanley Junction, 7¼ miles north of Perth on the Scottish Midland Junction Railway, later part of the Caledonian, to Dunkeld, a distance of just over eight miles, or a total of 15½ from Perth, and in 1863 the Inverness and Perth Junction Railway was carried across the mountains to Forres, on the Inverness and Aberdeen Junction Railway. So there was a continuous railway between Inverness and Perth, where there were connections with Edinburgh, Glasgow and the South.

The picture at the head of the page shows Dalnaspidal, a typical Highland station, as it appeared in 1928. The locomotive seen at the platform is "Loch Laoghal," by then L.M.S. No. 14393. The illustrations to this article are from photographs by H. C. Casserley.

In 1865 these three companies joined forces to form the Highland Railway, which eventually extended to Wick and Thurso, with a branch to Strome Ferry and the Kyle of Lochalsh. These lines were now roughly in the shape of a giant cross, the long winding main line from Wick to Stanley Junction and Perth, 305 miles long, being cut by the line from Keith in the east to the Kyle of Lochalsh in the west.

Now let us take a look at the characteristics of the Highland Railway. North of Perth the country is mountainous and to a railway engineer it seemed to be as unkind as possible. Yet the railway through it had to be made cheaply; no long and costly tunnels, and as few deep rock cuttings as possible were the instructions, though by following the natural water courses there appeared an abundance of viaducts and some very handsome bridges.

At Stanley Junction the Highland commences as single track and follows the valleys of the Tay, the Tummel and the Garry Rivers to Blair Atholl, at the foot of the Grampians, on a relatively easy but undulating route. Here are kept a stud of banking engines, of which the last Highland ones were 0–6–4Ts, for assisting trains up the 18 miles almost

A general view of Thurso, the farthest North station in the British Isles. The engine is a Highland 4-4-0, "Ben Alder," which still survives, although withdrawn.

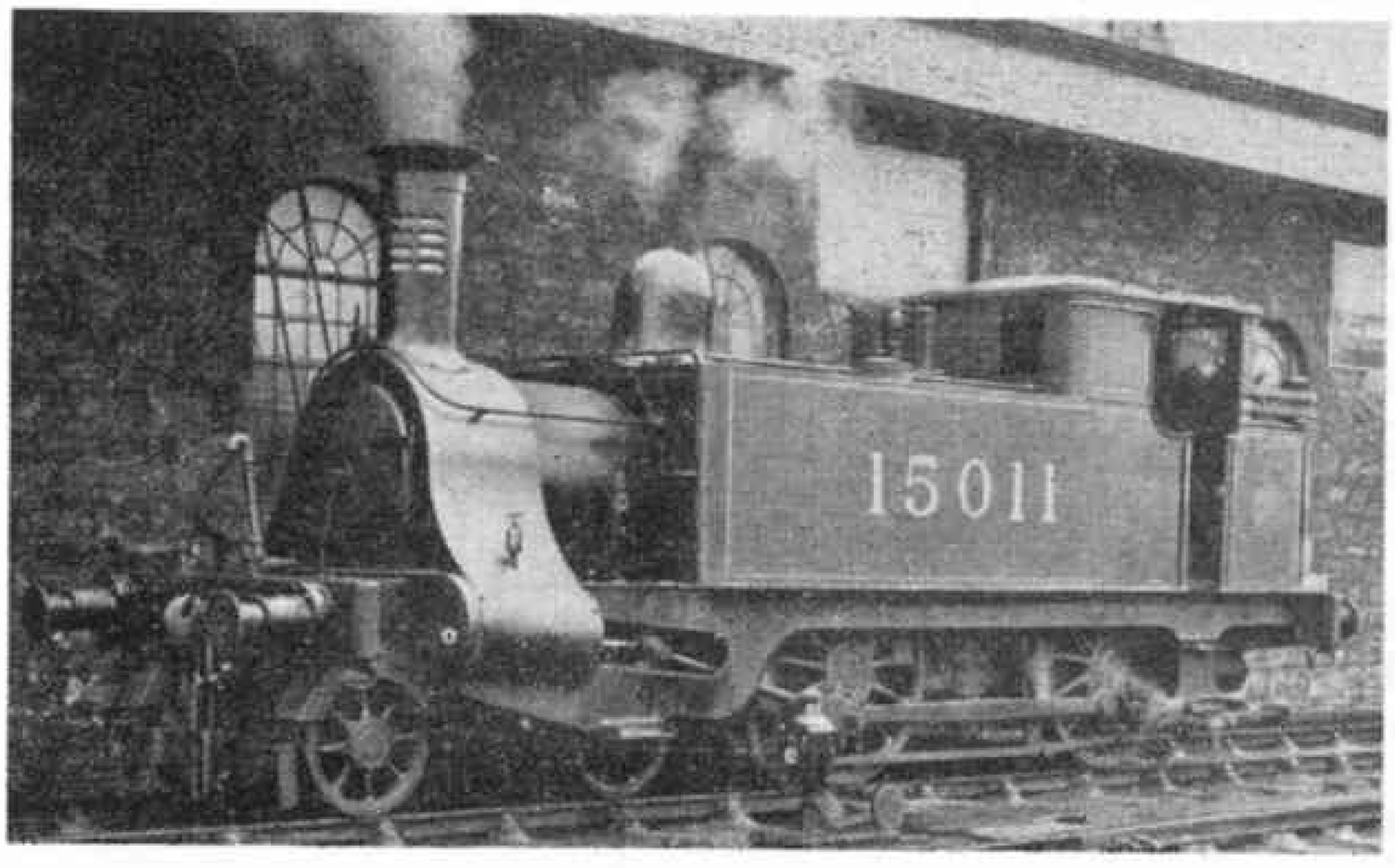
continuously against the train at 1/70–1/100 to Druimuachdar Summit, 53 miles from Perth, which is 1,484 feet above sea level and is the highest main line summit in our island.

The line then falls at between 1 in 80 and 1 in 100 to Newtonmore, whence it is more nearly level in the upper Spey Valley to Aviemore, where even in the summer months little patches of snow may be seen in some of the corries in the mountains shaded all day from the sun. In order to assist timekeeping, and to increase the capacity of the line, this has been doubled from Blair Atholl over Druimuachdar to Dalwhinnie, a distance of just over 23 miles.

Turning down the Spey Valley from Aviemore we fall slightly for over 12 miles to Grantown-on-Spey, and then turn northward into the wild moors of Dava. There we climb for about six miles at 1 in 80 to Dava Summit, 1,052 feet above sea level, before dropping steeply down to the coast at Forres. Thence the 24½ miles forward to Inverness is easy going.

The railway made a long detour between Aviemore and Inverness. This was a constant source of anxiety to the Highland Directors, not only because of the extra cost involved in running trains over the extra mileage, but also because there was a rival in the field. A direct line therefore was built between Aviemore and Inverness via Carr Bridge and Daviot, and when this route was opened in 1898 it shortened the distance by 26 miles. It is in this section that the steepest grades and longest viaducts are to be found. In the 34¾ miles, the twelve up to Slochd Summit 1,315 feet above sea level are inclined at 1 in 100 and 1 in 70, but it is the tortuous southbound ascent from Millburn Junction that is the most gruelling of all the Highland banks. This stretch is 22 miles long, about half of which is at the ruling grade of 1 in 60. The two finest viaducts are that at Culloden, which is 1,785 ft. long and 130 ft. in height and has 29 masonry arches, and the one over the river Findhorn, which consists of steel spans, and is 1,331 ft. long and 140 ft. high.

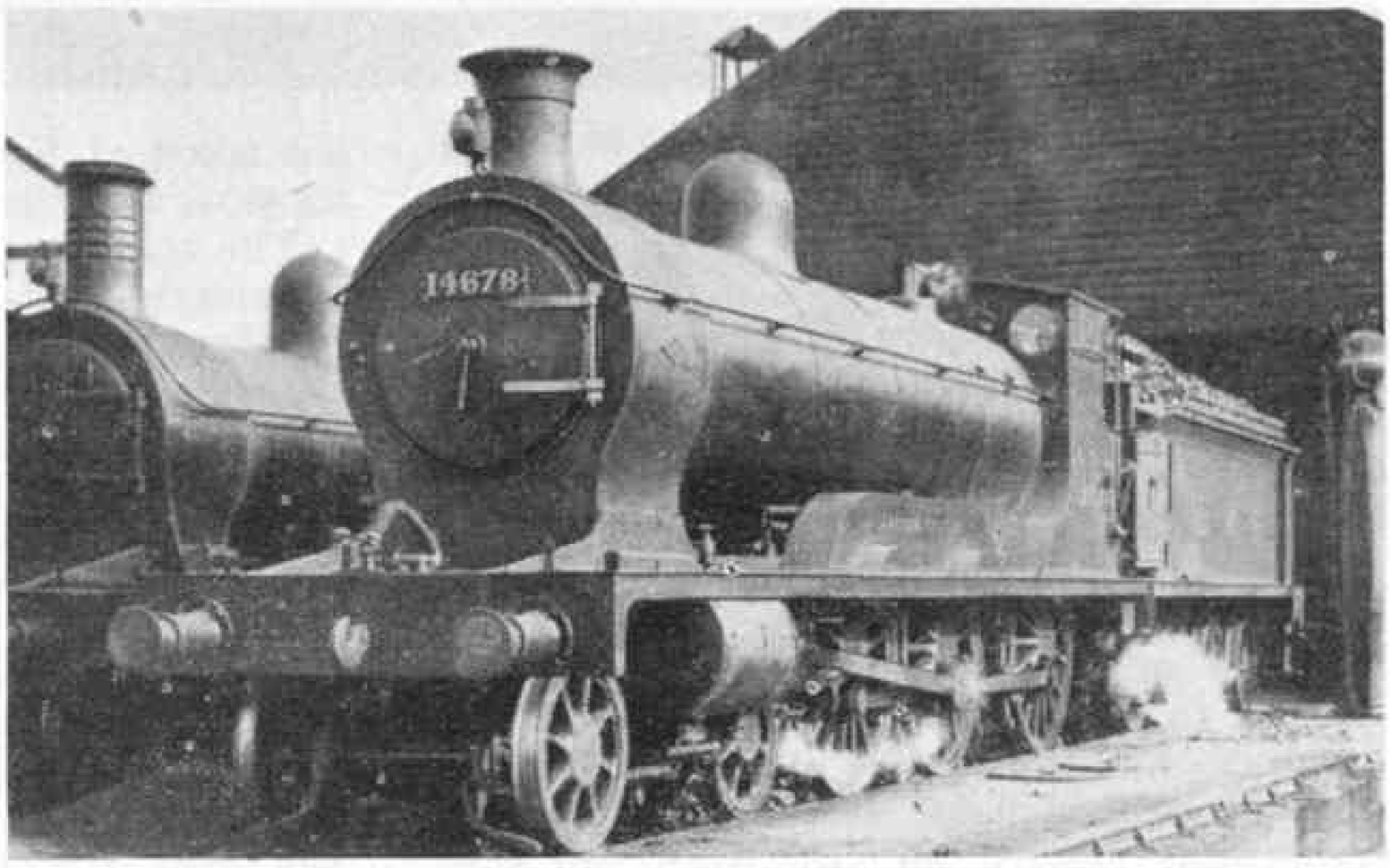
The section of the Highland Railway north of Inverness is not mountainous. There is a difficult and tortuous climb in rocky country to a summit of 488 ft. beyond Lairg, which is a railhead for road traffic to the West. There is a small engine shed at Helmsdale, which



The style of earlier Highland locomotive construction is well shown by this quaint little 4-4-0T, L.M.S. No. 15011. It was built in 1878.

incidentally is as far North as the Royal Mail Van and Restaurant Cars travel, and on leaving that station and entering Strath Ullie the line approaches the terror of the Far North Route, rising firstly on easy grades that give way to inclinations of 1 in 60 and 1 in 70 and 80 on the moorland. The utter bleakness as we pass Kinbrace and Forsinard, with the succession of snow sheds, are grim reminders of the peril of snow in this area.

The Highland was not a company noted for fast running or long distance non-stop runs. On the other hand, its locomotives were definitely outstanding. The earliest were of the Alexander Allan style, whose influence was apparent in the later Stroudley (who went to Brighton) and the Jones designs. Then followed a period of simpler and neater looking engines by Drummond before the coming of the massive outlines of the River and Clan 4–6–0s by Smith and Cumming respectively. All the Highland engines were locomotives of character, and up to Drummond's time many were recognisable by their louvred chimneys, slotted frames, and inclined outside cylinders built into the smoke-box.



L.M.S. No. 14678 "Gordon Castle," of a class that did much Highland main line passenger work for many years.

All Highland passenger engines and some mixed traffic were named and each class was known by that designation, Loch, Strath, Ben, etc. Perhaps the most famous of all the Highland engines, is the David Jones 4–6–0 No. 103. This was the prototype of the famous Jones "Goods" engines and was the first with the 4–6–0 wheel arrangement to work in Great Britain. It was constructed in 1894, when some other main lines were still using single drivers for their crack trains, and though a goods engine its class was used with equal success on passenger duties.

This goods class was followed by its enlargement in the Castle class, a purely passenger design. These handsome locomotives would slog away day by day with heavy trains and never cause a moment's trouble to their crews.

After Stroudley's time the livery of the Highland engines was changed from yellow to green, and while shades may have altered a little this was the colour right up to the formation of the London Midland and Scottish Railway Company. Lining and lettering also altered from time to time, but most important is the fact that some engines actually bore the proud words *The Highland Railway* in full on the tender or tank sides.

The Highland really served its patrons well. Their services were sparse in the quiet season, but few local people had reason to travel much. The long distance trains were run in groups, and when trains from Glasgow, Edinburgh or the South arrived at Perth much marshalling and shunting of coaches was necessary.

The system is now nationalised and the old Highland characteristics are fast disappearing. The old lattice type signal posts are now replaced by white tubular posts and upper quadrant semaphore arms, modern coaching stock is now to be found all over the system and the last example of a Highland 4–4–0 No. 54398 *Ben Alder* has been withdrawn from service, but at the time of writing is still in the Inverness area. Two of the light 0–4–4 Tanks for working branch lines are still in service.

Relics of the old days are still to be found, such as that lamp-posts of some original stations still carry the markings "I. & N. Rly." or "I. & A. Jct. Rly.," while engine No. 103, the original "Jones Goods" has been repainted in Highland livery and preserved at St. Rollox Works, Glasgow.

Flying the Air Ferry

By John W. R. Taylor

HUNDREDS of journalists have described, in all kinds of newspapers and magazines, what it is like to fly on Silver City Airways' cross-Channel air ferry service. Like most other passengers, they marvelled at its efficiency and novelty. But there is one small group of men who cross this air bridge to France so often that the novelty must have worn thin for them long ago—the pilots who fly the aircraft.

Hopping to and fro over the same short routes in the same aeroplanes, day after day, week after week, they see the air ferry through very different eyes from the average passenger. Yet, so far as I know, nobody had ever bothered to find out what they think about their job, until I went down to Silver City's airport at Ferryfield, on Dungeness, recently to interview Captain P. E. Rosser for the *M.M.*

"Gerry" Rosser is a typical ex-R.A.F. airline pilot, cheery, sporting a big handlebar moustache, but with the serious eyes and capable, modest bearing that inspire confidence in even the most nervous passenger. He was a co-pilot on the very first ferry flight on 14th July, 1948, and, since then, has made more than 8,000 Channel crossings. So I expected the worst when I asked if he found his work boring.

"I don't", he replied, very emphatically. "And I can't understand why anybody should. The number of different people you meet, and the interesting things that go on, make it anything but tedious." He told me that his passengers have included such famous persons as David Niven, Stirling Moss, Boris Karloff, and Sir Laurence Olivier and his wife, Vivien Leigh. Freight loads have ranged from Bentleys to beds, bulls and boxes of cheese.

I had another surprise when I asked him what types of aircraft he had flown in the R.A.F. during the war. Most Silver City pilots are ex-Coastal or Transport Command men, with plenty of experience of flying large military aircraft. Captain Rosser spent his Service career in Fighter Command.

Capt. P. E. Rosser, of Silver City Airways, some of whose adventures as an air ferry pilot are told in this article. Photograph by John W. R. Taylor.

He began his flying training on Tiger Moths and Harvards in Canada in 1940, and was posted to No. 96 night fighter Squadron at Wrexham soon after his return to the U.K. in the following year. It was rather a frustrating experience, because the squadron was equipped with Defiants, which had a top speed of under 300 m.p.h. and were inadequately armed with a dorsal turret mounting four machine-guns.

As well as flying the aircraft, the pilot was expected to navigate and to search for enemy raiders with none-too-reliable airborne interception radar, which was controlled by knobs on both sides of the cockpit. Having located one, the technique was to dive past the enemy, in the hope that the rear gunner would get in a good burst of fire on the way down. In fact, on occasions when the pilots managed to achieve the almost impossible with only two arms and get within range of a Junkers Ju.88 or Heinkel He.111, it was often the

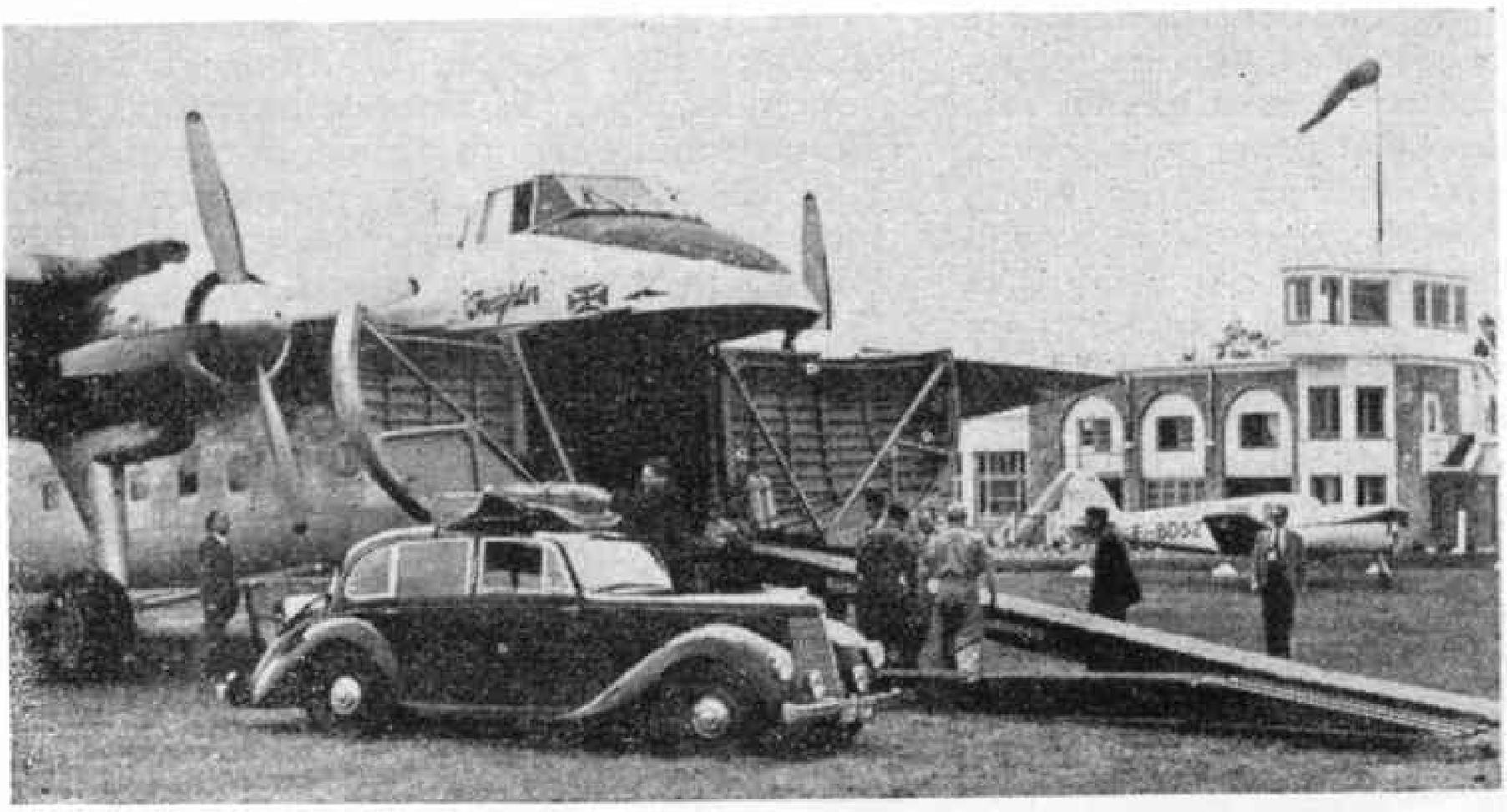
Defiant that got the worst of the exchange!

After a time, Flight Lieutenant Rosser was transferred to an air-sea rescue squadron, where he flew an even older, slower aircraft in the shape of the Walrus biplane amphibian, which cruised at only 95 m.p.h. But his new duties also gave him an opportunity to fly Spitfires on over-water search missions; so he was quite happy about the change.

There was a great deal of excitement in searching for a small dinghy in a big ocean; and an immense satisfaction when it was found.

One day, he saw a small one-man dinghy bobbing up and down on the waves off Portland Bill, circled overhead to make sure it was not empty, then alighted on the water and taxied up to the dinghy, whose occupant had been adrift for three days. Instead of being welcomed, he was astonished to be told to go away and stop interfering! Only with difficulty was the occupant of the dinghy persuaded to clamber into the Walrus. He turned out to be a master mariner, who had carefully worked out its drift throughout his period on the water, and calculated that he would have floated ashore, unaided, on the south coast within six more hours.

Later, "Gerry" Rosser himself experienced something of the anxiety and loneliness of being lost at sea in a dinghy. He volunteered to be the "victim" in a training exercise for new crews, and was duly cast adrift in the Channel. Unfortunately, by the time the air-sea rescue Walrus arrived on the scene, the tide had carried his dinghy miles away from where it was put down. He had a most uncomfortable time, while the crew of the Walrus carried out a square search for him. Being in the rescue service himself, he knew only too well how slim his chances of rescue would be if the weather changed. Fortunately, it did not; and he was eventually sighted and picked up after six hours afloat.



The first motor car ever transported by Silver City's Air Ferry was an Armstrong Siddeley saloon, on 14th July 1948. It is seen here at Le Touquet Airport. Photograph by courtesy of The Bristol Aeroplane Company Limited.

He ended his war service back on night fighters in Burma, flying first Beaufighters and then Mosquitoes. It was a rather unnecessary duty, because the Japs were not keen on fighting in the dark; so his

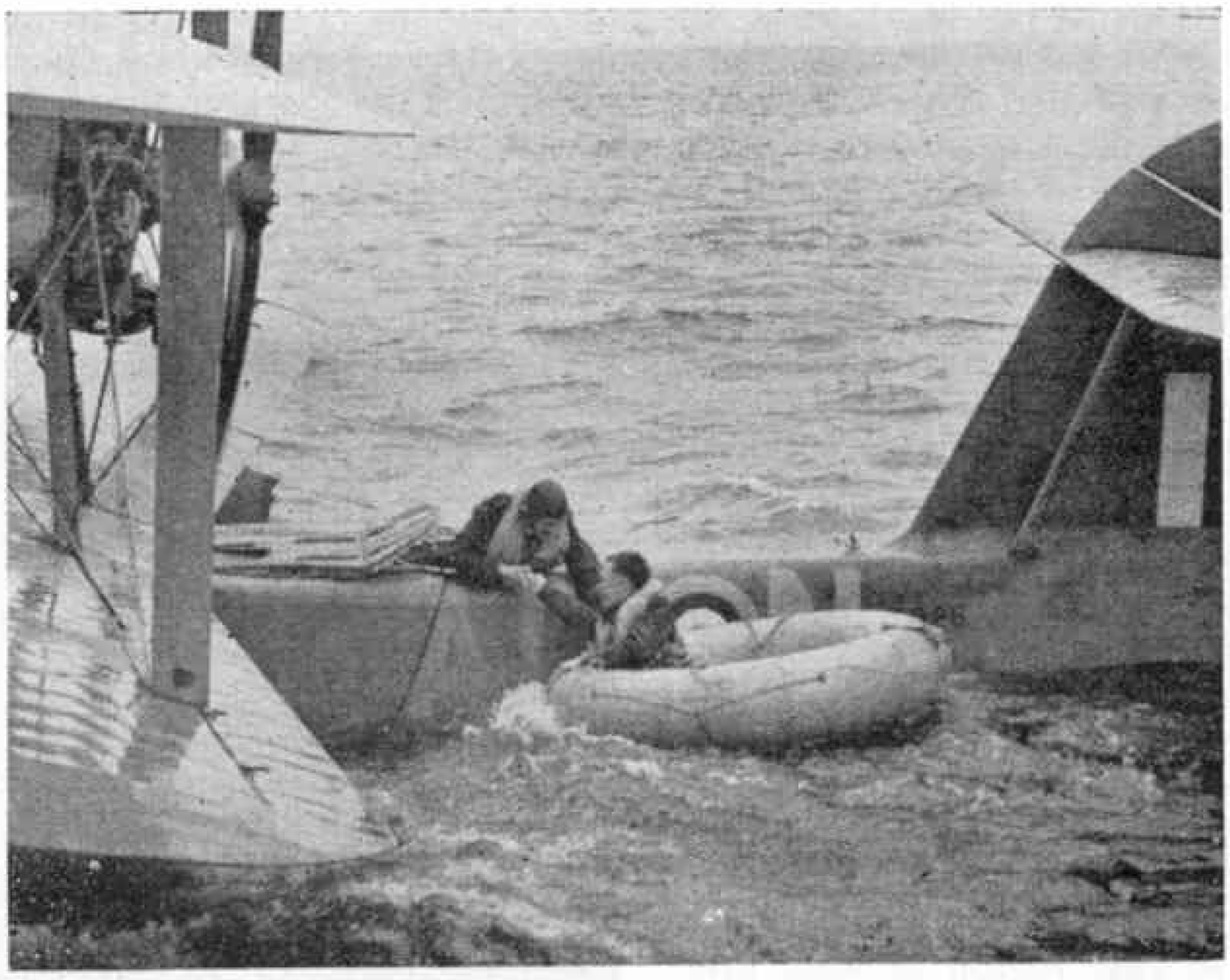
This picture of Capt. Rosser beside a loaded Bristol Superfreighter of Silver City Airways gives a good idea of the size of this transport aircraft. Photograph by John W. R. Taylor.

squadron spent most of its time shooting up ground targets.

When the war ended, he wanted to go on flying, but saw little chance of doing so. Then, one day, soon after he was demobilised, he met the operations manager of British Aviation Services Ltd. Within two days he was flying out to the Far East as first officer on one of the Dakotas which this company collected from Montreal and delivered to Batavia.

More Dakotas followed, then hundreds of Mosquitoes, Spitfires and a host of other types, which were ferried to all sorts of interesting places by the small force of about 30 pilots.

Meanwhile, British Aviation Services had formed a subsidiary company named Silver City Airways, and when this new company decided to operate an experimental cross-Channel car ferry service in 1948, Captain Rosser found himself in the co-pilot's seat of a Bristol Freighter for the first time. Since then he has flown more than 4,500 hours in Freighters. With 1,000 wartime hours in the R.A.F., and 1,700 hours on other types with British Aviation Services and Silver City, they give a total of 7,200 hours in his log-book, which must amount to somewhere around a million miles of flying.



A wartime incident. The crew of a Vickers-Supermarine Walrus amphibian of the R.A.F. Air Sea Rescue Service helping a "ditched" pilot from his one-man dinghy.

Two months after Silver City flew their first motor car to France, they offered to lend a hand on the great Berlin Air Lift. The Freighter was transferred to Germany and "Gerry" Rosser went with it. Big advantage of the Freighter was that its nose-loading doors enabled it to accommodate bulky loads that would not go into other aircraft that were much larger, but had smaller doors. On one occasion, he flew some fire engines into Berlin. Other loads ranged in value from gold bullion to a cargo of fish that was already half rotten before take-off.

One of his passengers was a Foreign Office gentleman who had to investigate reports of aircraft being shot up by Russian fighters in the air corridors to Berlin. He obtained all the photographic evidence he needed of intrusion in the air lanes when two Soviet fighters were spotted, indulging in air-to-air gunnery practice a few hundred feet away from the Freighter, and spraying bullets all over the place.

When the Freighter was taken off the Air Lift, Captain Rosser returned with it to England and resumed work on the ferry. He has been doing it ever since, with occasional interludes such as a spell on the "Little Air Lift" into Berlin three years ago.

In Winter time, when the tourist trade drops off, Silver City do not put up the shutters and wait for Spring. There are still export cars and an endless variety of freight to be flown across the Channel; and the Freighters are offered for ordinary charter work.

This adds immensely to the interest of being a Silver City pilot, because the aircraft are capable of carrying huge single components such as replacement drive shafts and propellers for ships, and Captain Rosser once had the job of flying this sort of load to a crippled Naval vessel at Hong Kong.

Just before he landed there, he received an urgent radio message from the company's headquarters in London, telling him to unload as quickly as possible, turn round and fly home via Port Sudan, where there were two Pest Control Sikorsky S-51 helicopters waiting to be transported to England.

(*Continued on page 634*)

Volcano in Eruption

Mt. Ngauruhoe of New Zealand

By V. May Cottrell

THERE can be few spectacles in Nature as awe-inspiring as a towering volcano in violent eruption. For such a demonstration of the terrific power of natural forces in furious, unrestrained action is an unforgettable sight. Since June 1954 visitors to the New Zealand Government Tourist Hotel, the Chateau Tongariro—on the foothills of Mt. Ruapehu—have been able to witness this alarming phenomenon from a safe distance. For the huge landscape window on the southern side of the hotel makes a perfect frame for this imposing and beautifully symmetrical peak of Mt. Ngauruhoe, some six miles distant.

During a brief visit to the Chateau, before the recent period of violent activity, we watched with delight the lovely picture presented by the mountain, with its great plume of white smoke soaring straight upward or wafted into fantastic shapes by a sportive breeze. The scene, as viewed from the distance, was strangely peaceful, despite the evidence—provided by the smoke cloud—of fierce and never-dying fires within Ngauruhoe's great bulk.

The mountain scenery in this region is very fine indeed and well worth a visit for that alone. For Mt. Ngauruhoe, 7,515 ft., is only one of a series of impressive peaks which dominate the landscape for many miles around in the central section of New Zealand's North Island. Mt. Ruapehu, 9,175 ft. is the only glacier peak in the North Island of New Zealand, and the Mecca for skiers from all over the country during the winter months. From the recently installed chair-lift on the slopes on Mt. Ruapehu a fine view of Mt. Ngauruhoe and the surrounding country is obtained, including a glimpse of the third peak, Mt. Tongariro, 6,458 ft. and the lovely, snow-capped peak of Mt. Egmont, 80 miles away across country.

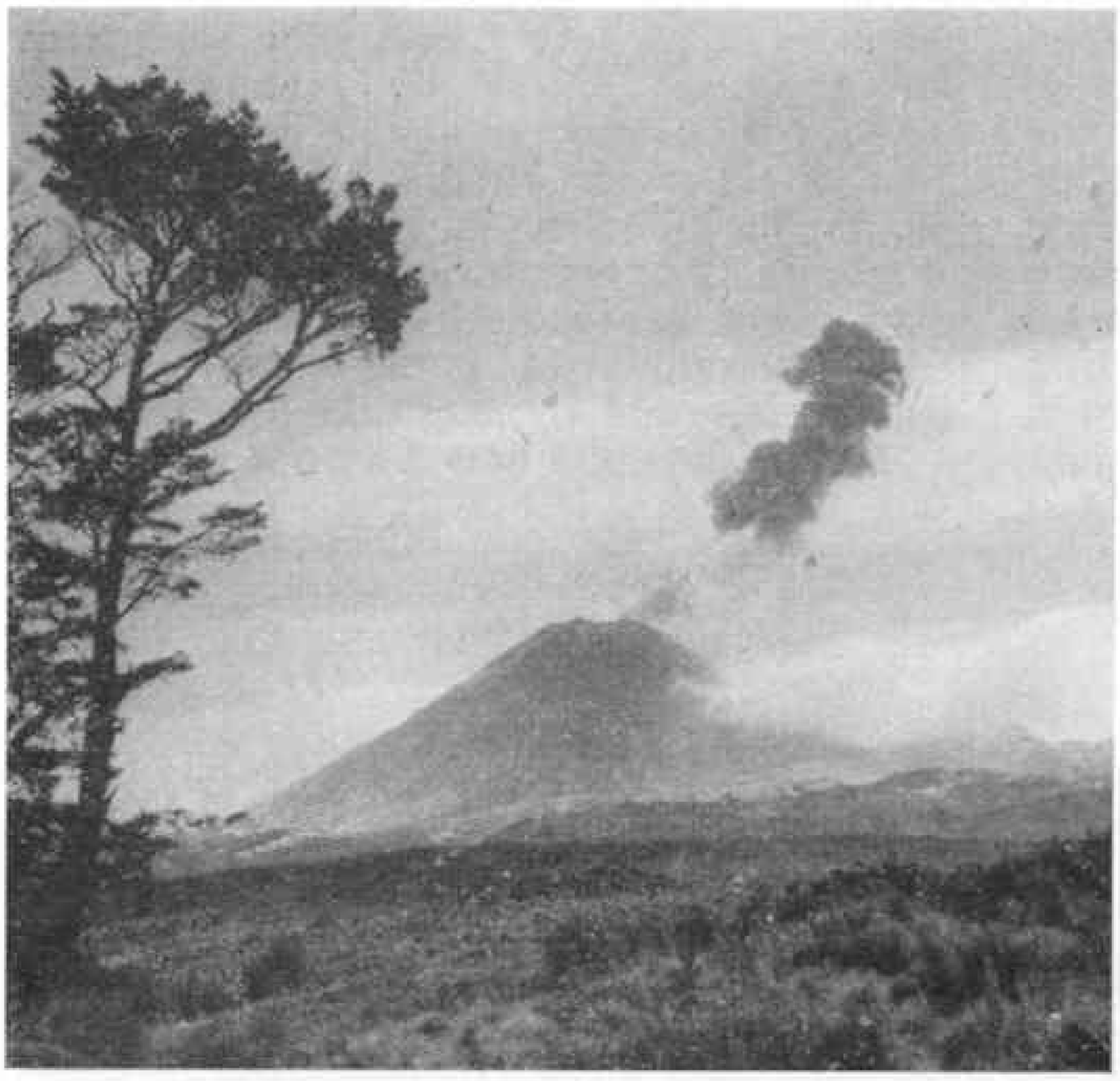
We were able to enjoy this wide panorama by driving our little Morris 8 up the four miles of rough, rocky road to the Salt Hut, 5,100 ft. high, to which mountain climbers and skiers are conveyed in the mountain bus. The gentle slopes in front of the Chateau provide a safe training ground during the winter months for new chums on skis, and an excellent golf course during the summer.

After smoking and steaming continuously since 1839, when white men first witnessed the mountain in eruption, Ngauruhoe suddenly became very active in 1949, when the volcano poured an incandescent stream of lava 450 ft. wide more than 1,000 ft. down the mountain side in three hours. At that time volcanic dust was found as far afield as Napier, 100 miles away, and sunsets were rendered unusually brilliant by the presence of this dust in the atmosphere.

Mt. Ngauruhoe seen beyond the chair lift to the ski-ing grounds on Mt. Ruapehu. A black flow of lava can be seen on its side.

As it proved later, this was merely a prelude to the violent eruptions of 1954. In June of that year began a long period of furious activity on the mountain and the flaming, belching peak was front page

news for many months. Latterly it has been superseded somewhat by other important events, but Ngauruhoe has not as yet returned to its former quietude. Its outbursts are less frequent and less violent than those in the latter portion of 1954, and the early months of 1955, however.



Mt. Ngauruhoe's plume of smoke fantastically shaped by the breeze. This volcano has been violently active since June of last year.

In June 1954, when the mountain began to fountain molten lava for only the second time in over a century, there was an influx of volcanologists, geologists, geophysicists, journalists, photographers, government technicians and ordinary sight-seers to view the spectacle. In spite of repeated warnings, guides, trampers, scientists, journalists and photographers climbed to the lip of the crater in between eruptions and gazed into its fearful depths from which issued terrifying rumblings and roarings.

Some of these crazily reckless spirits brought back thrilling first-hand accounts of what was actually happening on the mountain. They told of the bursting forth of roaring steam jets and the formation of a gigantic spatter cone built within the crater itself by the lava, and of twin vents gushing simultaneously at its summit.

As viewed from the Chateau the spectacle presented by the fiery peak was most impressive, but what it must have been like at close quarters can be realised, in part at least, by the excellent close-up views obtained by some of the more intrepid climbers. One photographer had to flee for his life, abandoning to the steaming lava flow a £50 camera lens.

It was only by keeping to the windward side of the volcanic activity—where there was comparative freedom from poisonous gases, hot ash and steaming lava—that any measure of safety was obtained. Even so, parties of investigators were continually threatened by showers of red hot rocks—some of them as large as houses—that were flung with terrific force out of the crater and hurtled down the mountainside, unpleasantly close to them, at times.

One such huge rock, after it was partially cooled, acted as a buttress for one party to protect them from flying debris for several days and nights spent dangerously close to the inferno. Just imagine anyone making their bed on the cooling lava of a monster rock which, after being shot from the crater, split in two after it had crashed down the mountain. One member of the party remarked, "It kept us warm and sheltered from the bitter wind during several bleak, mid-winter nights spent on the belching, shuddering mountain." They utilised a projecting ledge of hotter lava as a cooking stove to boil their eggs for breakfast and to heat water for tea, with the mountain bellowing its defiance and wrath continually at their daring intrusion of its mighty domain.

However, despite Ngauruhoe's violent protests, these young people obtained a remarkable set of still pictures, with the aid of powerful telephoto lens. They even made a colour film as well which, in the night scenes especially, with the lurid light cast by the flaming peak, will certainly produce most spectacular effects when it appears on the screen.

The deep, booming sounds made by the terrific explosions, as the volcano belched forth hundreds of tons of molten metal, rocks and ashes, kept visitors at the Chateau awake, or roused them suddenly from slumber, many nights in succession, while the whole extensive area of the National Park, and the surrounding country, rocked with each fresh blast. In the township of Taihape (*Continued on page 634*)

Road and Track

David Brown and Aston-Martin

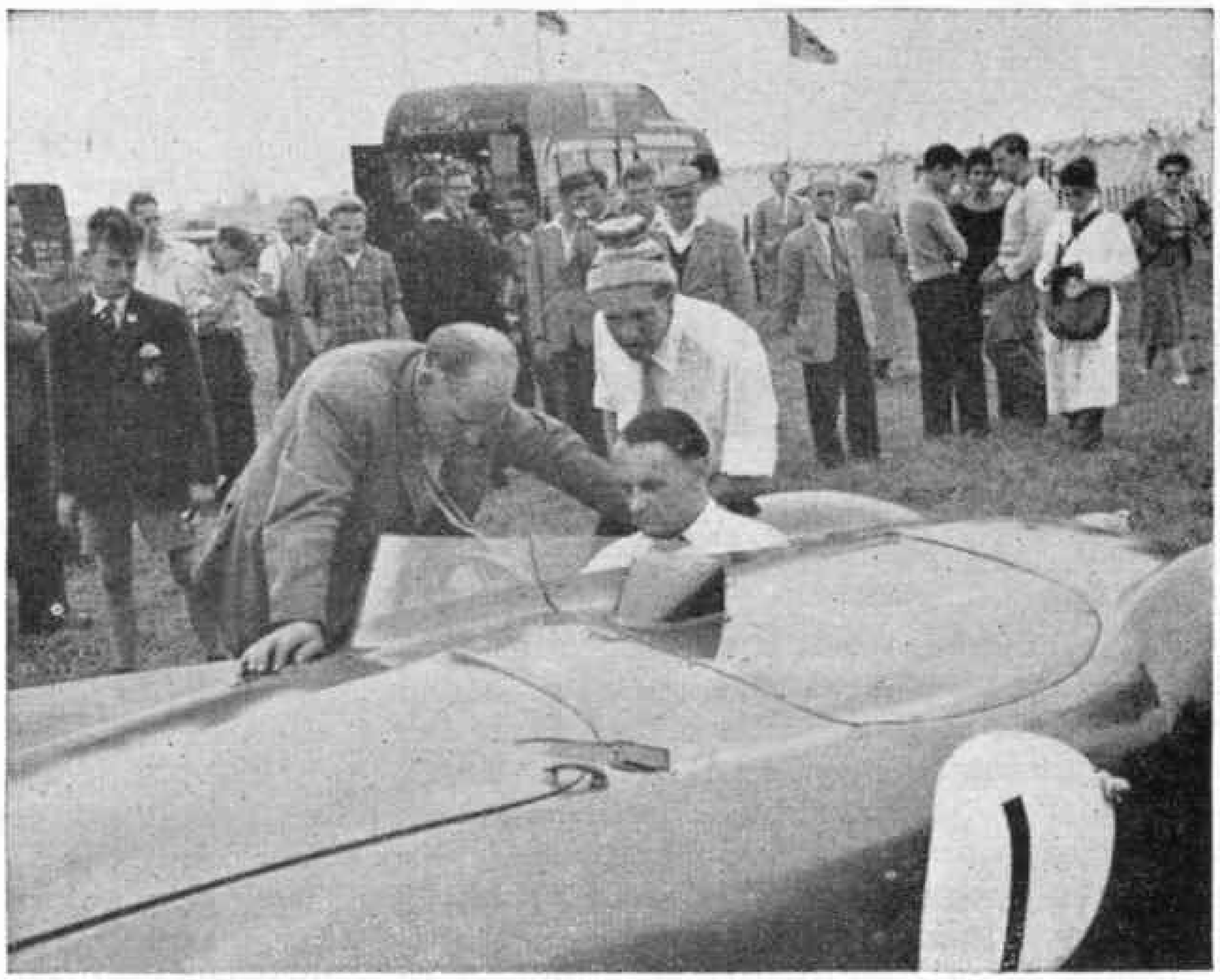
By Peter Lewis

SEPTEMBER 1955—the Tourist Trophy. Two cars remained stationary at the pits, not responding to their starters, as the tightly packed field accelerated away towards Leathemstown. Then they too were off and one of them—the sleek green Aston-Martin of Peter Collins—put in an electrifying first lap on the tricky Dundrod circuit to hurtle through the field from forty-eighth position to fourteenth in just under five minutes! By lap 12 Collins lay fifth and by lap 31 the Aston was third—behind Moss and Hawthorn — and ahead of the other two works Mercedes.

This magnificent effort —which unfortunately was not justly rewarded, as the car soon afterwards retired with electrical trouble — is typical of the Aston-Martin equipe. Under the dynamic leadership of Mr. David Brown, Chairman and Managing Director, and within the framework of John Wyer's highly efficient pit and team control, the Aston-Martin "boys", particularly Collins, Parnell and Salvadori, have built up a reputation as successful and colourful as did the Bentley "boys" in the 1920's. Whatever the odds, however strong the challenge, nothing daunts the impeccably prepared 3 litre cars from Feltham, Middlesex, one of which was timed at 155 m.p.h. in the Le Mans 24 Hour Race.

Mr. Brown entered his father's Huddersfield works at the age of seventeen as an apprentice, and from the outset refused to accept that anything was impossible. He put an unprofitable section of the works on its feet, to the delight and surprise of his father, and from then went on from strength to strength. At twenty-three years of age he was Assistant Works Manager, and five years later Managing Director. In 1939 David Brown Tractors Ltd. was formed, and after the war other companies were acquired. In 1947 Aston-Martin became part of the group, followed by Lagonda a year later.

David Brown is now fifty-one years old,



Reg Parnell and Peter Collins, Aston-Martin racing drivers, with J. Wyer, team manager, in the cockpit.

not easily recognised at race meetings, where many an enthusiast, including myself on one occasion, has stood next to a short, unassuming middle aged man in glasses and wearing a cap without realising that he was the power behind the Aston-Martin "boys". In his younger days he entered many a hill climb, including Shelsley Walsh, and nowadays he insists on being the first to test any new design.

And the drivers themselves? They will tell you that the equipe is the equivalent of a "happy ship" in the Navy. Jovial Reg. Parnell, as cheerful in the Paddock as he is determined on the circuit, has shared the Aston-Martin successes from the first season of competition work, when with Charles Brackenbury in a D.B.2 he was

sixth at Le Mans in 1950. Winner of the B.R.D.C. Gold Star, awarded to the most successful British driver of the year, in 1947 and 1948, he first raced at Donnington in 1934 in an unsupercharged 2-litre Bugatti.

Despite his twenty years in the game the veteran has put up some astonishing performances this season. He won the International Sports Car Race at Silverstone in May, starting from the rear of the grid and passing eighteen cars on the first lap into fourth place, at 93.58 m.p.h., a new sports car record that was faster than the winning average for the 1954 British Grand Prix on the same circuit. His finest race was at Oulton Park last August, when he led the International Trophy Race from start to finish, put up fastest lap, trounced a strong international field of thirty and kept the green Aston securely — and undeniably — ahead of Hawthorn's Ferrari.

R. F. Salvadori in his Aston-Martin in the paddock at Goodwood.

The youngest of the Aston-Martin trio is Peter Collins, who was second at Le Mans this year with Paul Frere and first home in the 3-litre class. He started young, winning his first big race at Silverstone when only seventeen. He joined Aston-Martin in 1952 and won the Goodwood Nine Hour Race with Pat Griffith. Like Stirling Moss and Mike Hawthorn, Peter Collins is a full time professional racing driver. Although no one enjoys a spot of harmless horseplay between races more than he does, few drivers are in the same class as Collins, whose calm, methodical handling of Formula 1 cars this season has put him in the top flight of G.P. drivers. He likes the new B.R.M., which he told me recently at Oulton Park is nicer than the old design to drive.

David Brown, the power behind the Aston-Martin racing team.

When I asked him how he had managed to pass so many cars during the first lap of the Dundrod Circuit, his reply was typical. "Well", he said, "the team plan was for me to get up with the race leaders, and ahead of the other Astons. When I eventually got going—and I was very angry about that starter—I got the signal from the pit 'Go like blazes', and I did just that."

Roy Salvadori of Esher, Surrey, thirty-three years old and a company director in the motor trade, completes the trio. He first raced in 1947 and holds many lap records in the Grand Prix field, where he is by no means an easy man to catch when S. Greene's Maserati is on form. As immaculate as the team cars and very popular with young enthusiasts, who are always greeted with a smile and a kind word, Roy first drove for Aston-Martin in 1953. This season his unbeatable form at Aintree in July, when he won the sports car race—and Aston-Martins took the first four places—was delightful to watch.

The man behind the cars and drivers is team manager John Wyer,

(Continued on page 634)

This picture shows the flying fish, with its two pairs of wings outstretched.

How Flying Fish Fly

By R. H. Ferry

WE need not look for a reason why flying fish fly. They are pursued and persecuted by all kinds of predatory sea pirates, chief of which are bonito, dolphin and albacore. But there is little doubt that the flying fish have progressed a long way from the rather primitive leap away from their attackers that first made them test the air. From jumping they took to "gliding," for that is what their so-called flying actually is, and as photographs of flying fish taken in the act of breaking out of the sea show no signs of near-by pursuers, we may suppose that flying fish also take the air for pleasure and the exhilaration of being airborne!

Judging from the great number of species of flying fishes with pectoral fins, those behind the head, that have developed into wings capable of supporting them in efficient and prolonged glides, we are in no doubt that Nature's experiment of enabling a fish to operate in two elements has been a success. Flying fish elude both their fish pursuers in the depths and fish-eating gulls in the air.

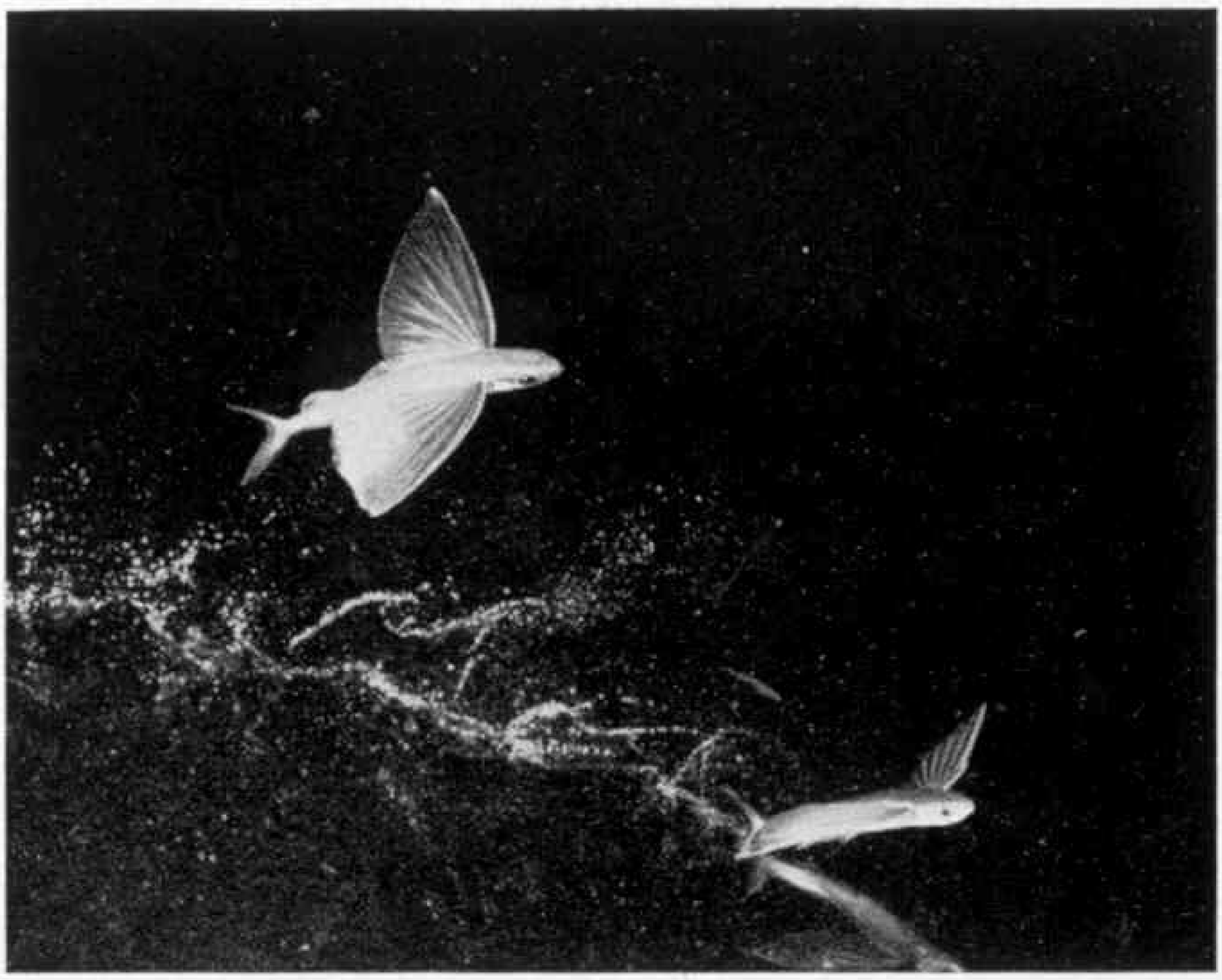
For many years our knowledge of flying fish has been very limited. Information was only to hand from observations made by deep-sea fishermen and from a study of fish anatomy made by naturalists. We owe a great deal to the American Professors H. E. Edgerton and C. M. Breder, Jr., who took clear photographs of flying fish in 1940. These photographs threw the first true light on fish flight, and cleared up many points that had hitherto been only suspected aspects, and, indeed, proved many which before were nothing more than surmise. The value of their work of research may appreciably help in practical aerodynamics.

The flying fish is Nature's seaplane and speed boat. The two naturalists took photographs at night off the Californian coast, and I am indebted to Professor Edgerton for sending me some of the exposures, and for information about them. The exposures were made at 1/10,000 of a second, which is sufficient to stop all speed and motion. This way of taking high-speed photographs was developed at the Massachusetts Institute of Technology.

The fish is seen shooting along just under the water, with the upper portion of its tail creating considerable spray and wake. When the fish emerges, the snout is slightly raised, and at the same time the pectoral fins, which lie folded to the fish's sides, are raised to form pockets of resistance and catch the air.

At the start of the flight, and before actual flying speed is achieved, the fish taxies along on its tail by means of propelling thrusts. After the flight the taxi stage can be resumed, and another flight made without submergence.

While the average distance flown is about 150 yards, and the altitude varies up to 10 feet, far longer flights, probably broken by short taxi periods, are recorded. When the fish take off they rock violently from side to side, and this no doubt accounts for the reports often made that the fish actually flap their "wings," or that they pretend that they cannot fly and thus confuse



The upper flying fish is in full flight and appears to be rolling to the right. Below the lower one is the characteristic zig-zag track made while the fish is taxying on the surface before taking off.

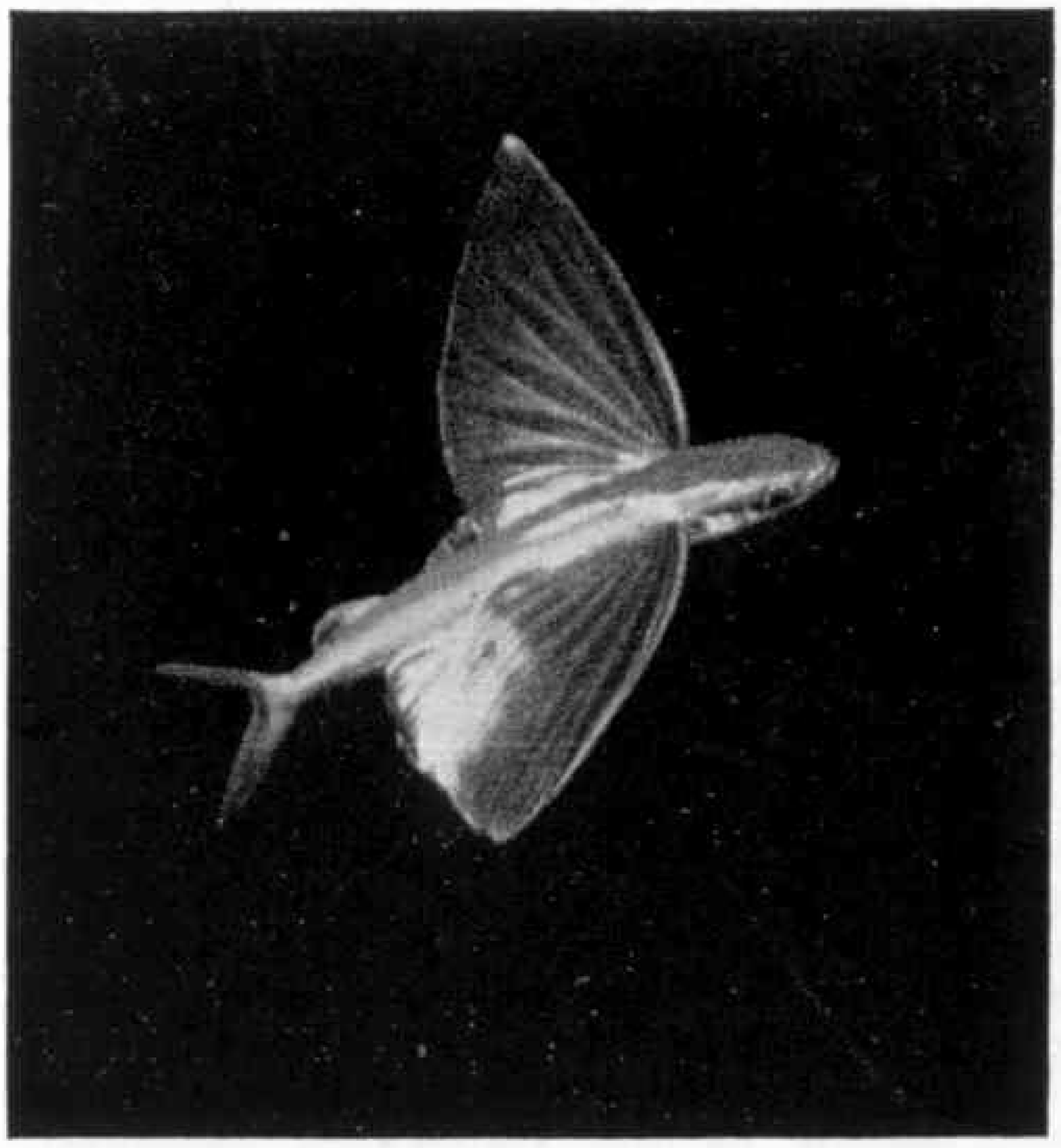
their attackers, in much the same way as the dropped wing technique of birds when escaping.

Flying fish do not, however, flap their "wings" under specific control. Mr. Breder, Jr., explains what really happens. "In considering the various flexures of the fin rays that are shown in these photographs," he writes, "it must be borne in mind that these are long, thin, more or less flexible rods that are attached only at their bases and then operated by small muscle bundles. Since the fish can only wave these rods about in various ways, mostly backward and forward and to a lesser degree up and down, and since they have no voluntary control over the curvature of them, it follows that the contortions result from wind pressure.

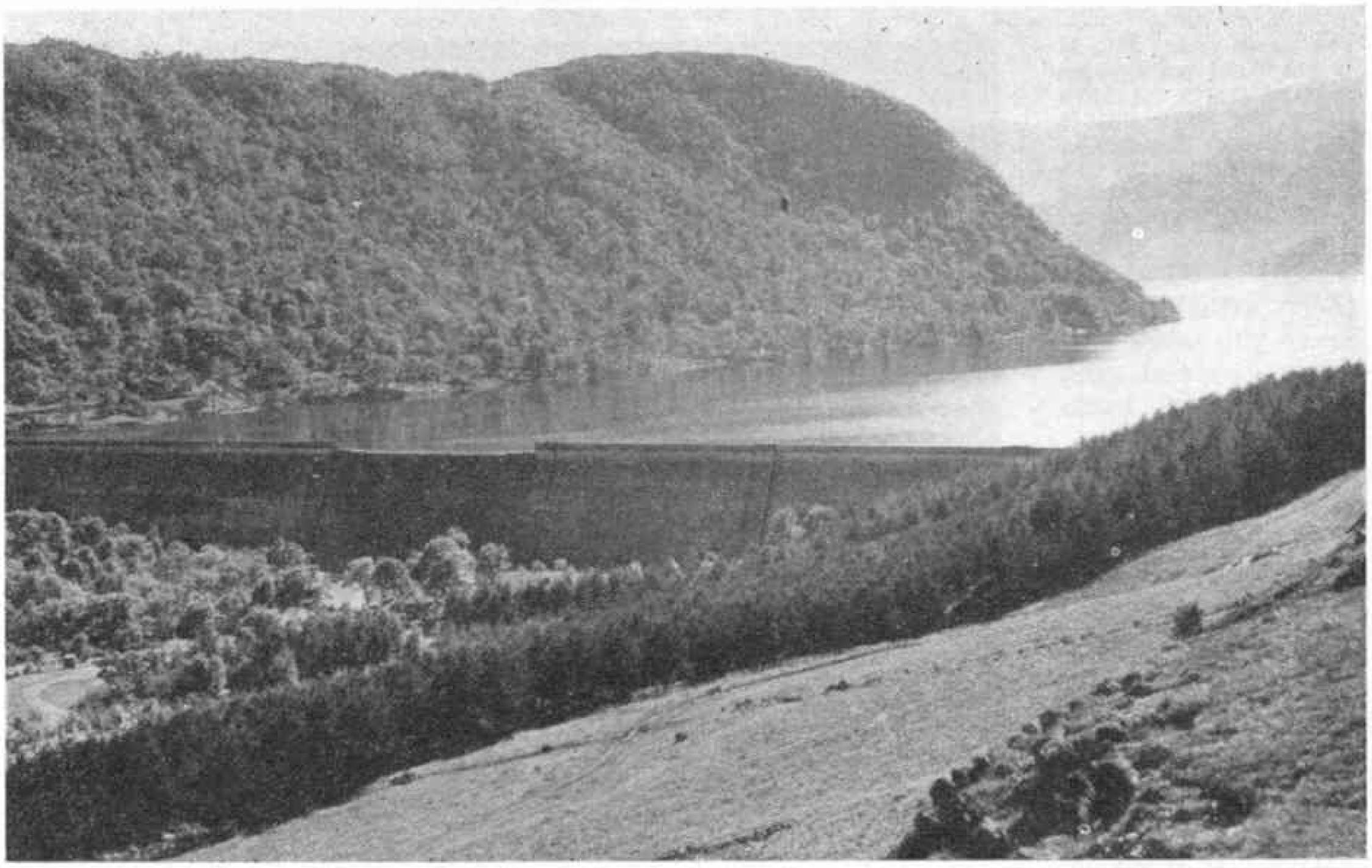
It is well known that gulls make use of up-draughts of air over the waves. We may deduce from the sometimes straight and sometimes curved flights undertaken by flying fish that they also appreciate the varying air conditions over the ocean and are not simply blown hither and thither like a feather. The marvel of their long-distance glides is appreciated when it is realised that the fish is nothing more or less than a sack of air. Some of the photographs taken showed the fish rather surprisingly with its mouth open; while this would appear to spoil the streamline, the creature may be filling up with air in flight. Once, when passing through the Red Sea, a small flying fish flew through the port hole of my cabin. When I entered a few minutes later I found only a deflated sack of skin over a frame of bones.

That flying fish make use of air currents is further borne out by the fact that the longest flights are seen to be made over the most turbulent seas, when the up-draught is appreciably greater.

Frank W. Lane, in his book *Nature Parade*, mentions that flying fish may reach a height of over 20 feet, travel a distance of a quarter of a mile, and attain a speed of probably 50 m.p.h.



The fish fully airborne.



The Haweswater Aqueduct

Pipeline Carries Water from Lakeland to Manchester

By the Editor

ONE of the greatest responsibilities of today, in cities and towns and also in the countryside, is supplying enough water to meet all needs. The amount required for each person in such a city as Manchester, for instance, is today very much larger than at any time in its history; and great engineering works, carried out at enormous expense, have been necessary in order to make sure that the city has a sufficient amount of water, with an ample reserve for periods during which rainfall is low and the level of the water in the reservoirs goes down in consequence.

Manchester indeed provides a very fine example of the work of the water engineer. The city has gathering grounds in the Pennines, and also in the Lake District, where two large lakes have been converted into reservoirs. The earliest of these to be so dealt with was Thirlmere, the level of which was raised by engineering works in order to provide a reservoir of greater capacity than the lake itself. Water from it reaches Manchester through a long pipeline.

The illustration at the head of this page shows the Haweswater Dam, with the lake beyond it. Building the dam raised the water level of the lake by 95 ft.

Even this gigantic work was not sufficient to meet the needs of the city, so in 1925 preparations were begun for a second lakeland scheme, this time with Haweswater as the reservoir. Here again a large dam was built in order to increase the quantity of water in the lake, the level of which is today 95 ft. higher than it was when in its natural state.

The Haweswater Dam was completed in October 1941, and as part of the scheme an aqueduct nine miles long was built between the reservoir and a point near Kendal, where a connection was made with the existing Thirlmere Aqueduct. This of course meant that water from Haweswater could be sent to Manchester, but the capacity of the Thirlmere Aqueduct was limited and the extra amount of water that could be carried was not very large. The Haweswater reservoir has a capacity of 18,662,000,000 gallons, and to allow for a much greater flow to Manchester it was necessary to build a new pipeline, now known as the Haweswater Aqueduct.

It was originally intended to start building this in August 1939, but because of the outbreak of war construction did not begin until 1948.

There are 82 miles of the Haweswater Aqueduct, and in its long course it passes through varied country. It has nearly 31 miles of tunnels through high ground, and almost 8 miles of concrete channels that have been covered over. There are rather more than 34 miles of siphons, in which the pipeline descends to the river or stream levels of valleys and ascends on the southern side. Nearly four miles of these sections consist of steel-covered single pipe siphons. The remaining 30.34 miles take the form of steel multi-pipe siphons, with four lines normally. A further 9.2 miles of steel pipe siphon connects the terminal reservoir at Heaton Park with Audenshaw No. 1 reservoir, so that water can be drawn direct from Haweswater into either or both of the principal storage reservoirs in the Manchester area.

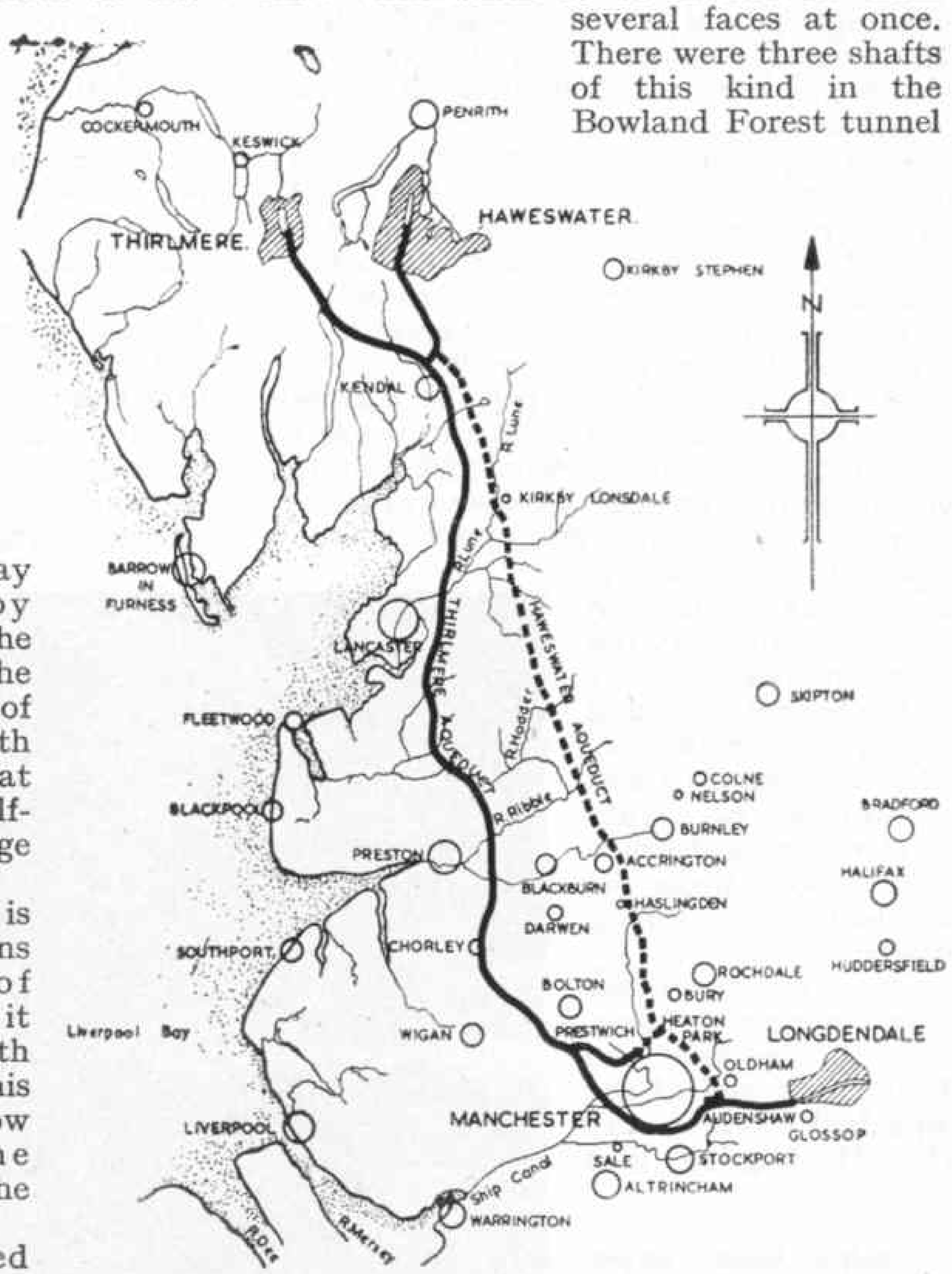
Some of the waterways are crossed by means of pipes laid below the bed of the stream, but larger rivers, including the Lune, Hodder and Ribble, were crossed on bridges or by spanning the river with self-supporting steel pipes, a plan that was used for crossing the Leeds and Liverpool Canal. An illustrated description of the Lune bridge appeared in the *M.M.* for March of this year. Except in one case, railway crossings were made by constructing subways for the pipeline, the space between the pipe and the inner surfaces of the subway being filled with concrete. The exception was at Wennington, where a self-supporting pipe over-line bridge was used for the crossing.

The diameter of the tunnels is 8 ft. 6 in., and the other sections of the aqueduct are of proportional capacity, so that it is capable of dealing with 105,000,000 gallons a day. This capacity is large enough to allow for enlargement of the Haweswater scheme when the demand rises further.

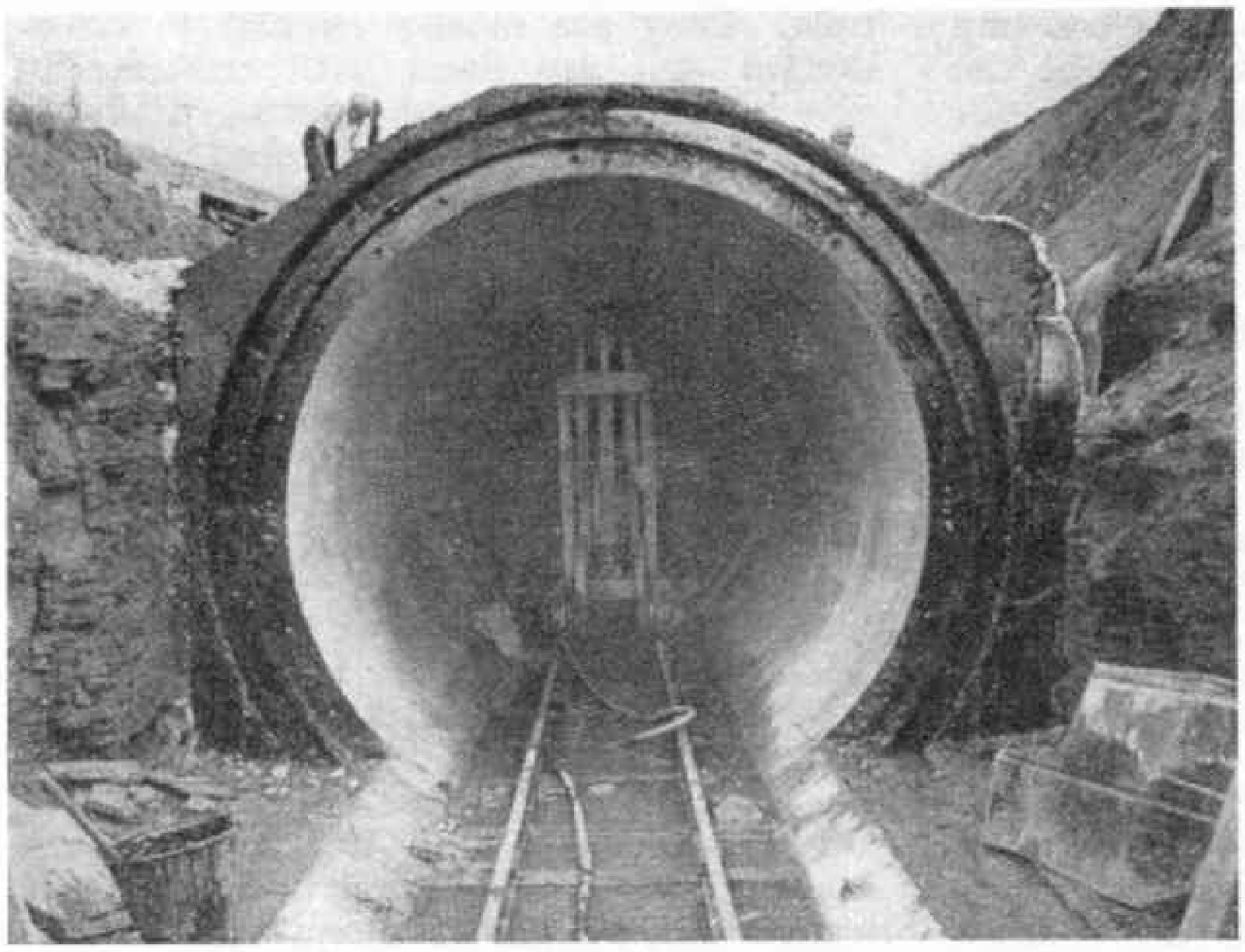
The tunnels and covered channels of the aqueduct have a drop of about 21 in. to the mile. They are mostly circular in cross-section and are lined with concrete to give them the finished internal diameter of 8 ft. 6 in. The steel cored concrete single pipe siphons have diameters of 8 ft. and 7 ft. 3 in., and the first steel pipeline on the five multi-pipe siphons is 4 ft. across.

Of the 82 miles of works the first nine had already been completed with the construction of the pipeline between Haweswater and the connection with the Thirlmere Aqueduct, leaving 73 miles to be constructed when work began on 1st April 1948.

The longest of the tunnels of the Aqueduct is 10¼ miles in length. It carries the pipeline under Bowland Forest, the sparsely populated moorland area between Clitheroe and Lancaster. As is usually done when boring tunnels, shafts were sunk at points along the line to allow excavation to be carried on from several faces at once. There were three shafts of this kind in the Bowland Forest tunnel



The dotted line on this map shows the course of the newly-completed Haweswater Aqueduct.



The Summer House conduit, in the Bowland Forest section of the Haweswater Aqueduct, is a covered concrete channel.

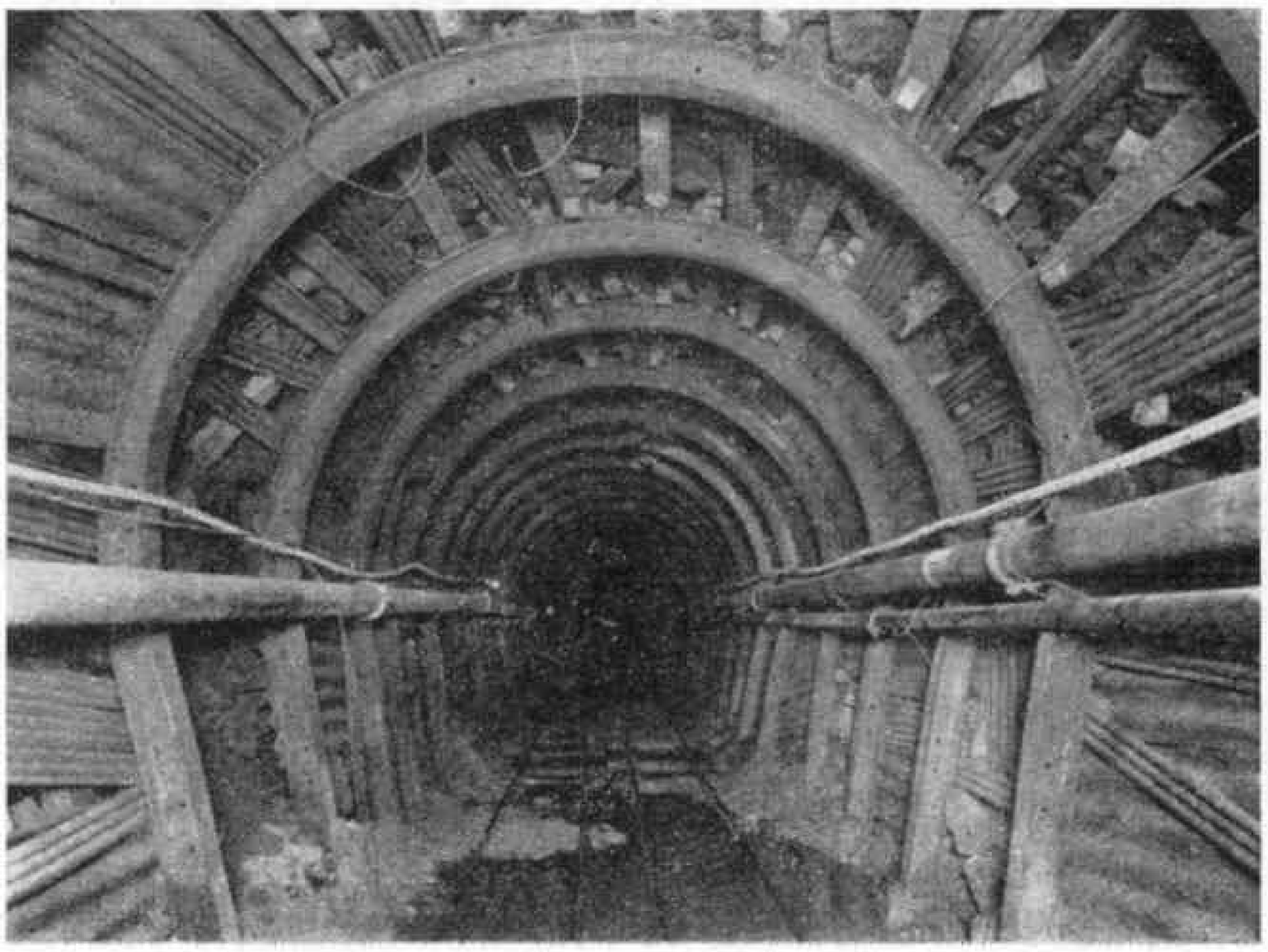
workings, one of which was 265 ft. deep. The ground through which the tunnellers drove was only specially difficult in two or three sections, and in one favourable stretch a record length of 334 ft. was driven from a single face in one week. In one section the ground conditions were so bad that they gave rise to distortion, and movement of the steel arches erected in the tunnel, so there the concrete lining was applied as soon as possible.

In the rest of the tunnel the concrete lining was not applied until the whole of the driving had been completed and the concrete sub-floor laid. Extensive grouting, that is forcing concrete under pressure behind the tunnel walls, was carried out to fill all cavities between the concrete of the tunnel itself and the rock behind it. This was done to seal off inflows of water, large volumes of which were tapped while the tunnel was being driven.

There are two other long tunnels between the Ribble and the Manchester end of the aqueduct. These are the Haslingden and Walmersley tunnels, 5.32 and 6.02 miles long respectively. They extend from Huncoat, near Accrington, to Gipsy Brook, Bury, and are connected at Rawtenstall by a 501 ft. length of "cut-and-cover" constructed within a steel sheet piled trench, which passes under the River Irwell 12 ft. below its bed.

In the Haslingden tunnel where mine workings were encountered, it was necessary to buy an immense pillar of coal to support a length of 1,500 yards, provision being made for access roads through the pillar. One of the shafts sunk to provide extra working faces was 332 ft. deep, with a drainage sump 30 ft. below tunnel level. In sinking this shaft a flow of water of nearly 2,000,000 gallons a day was encountered. It was necessary to line a 40 ft. section of the depth with cast iron segments, and to follow this up by heavy grouting with concrete in order to reduce the inflow sufficiently to allow sinking of the shaft to continue.

Water cannot just *(Continued on page 634)*



A typical tunnel section before lining. This is in Haslingden Tunnel, which is more than five miles long.

Looking to Space Travel

The Launch of Satellite Vehicles

By Eric Burgess, F.R.A.S.

DURING the past decade the use of rockets for probing the Earth's upper atmosphere has become of increasing importance. In the forthcoming International Geophysical Year, 1957-58, the United States alone plans to fire 45 Aerobee and 120 Rockoon high-altitude research rockets. Scientists of about 40 nations will take part in making observations.

High altitude rockets will also be fired by France, Russia and Britain. All the rockets fired will be equipped with instruments that will measure ionisation in the upper air, the Earth's magnetic field, the structure and composition of the atmosphere, high-altitude winds, polar lights and airglow, and the radiation from the Sun before it is filtered by absorbing layers in the lower atmosphere.

A nylon sphere containing a radio transmitter that was ejected from an Aerobee rocket at very high altitudes. The first satellites may be made in a similar manner, but will be smaller. University of Michigan photograph.

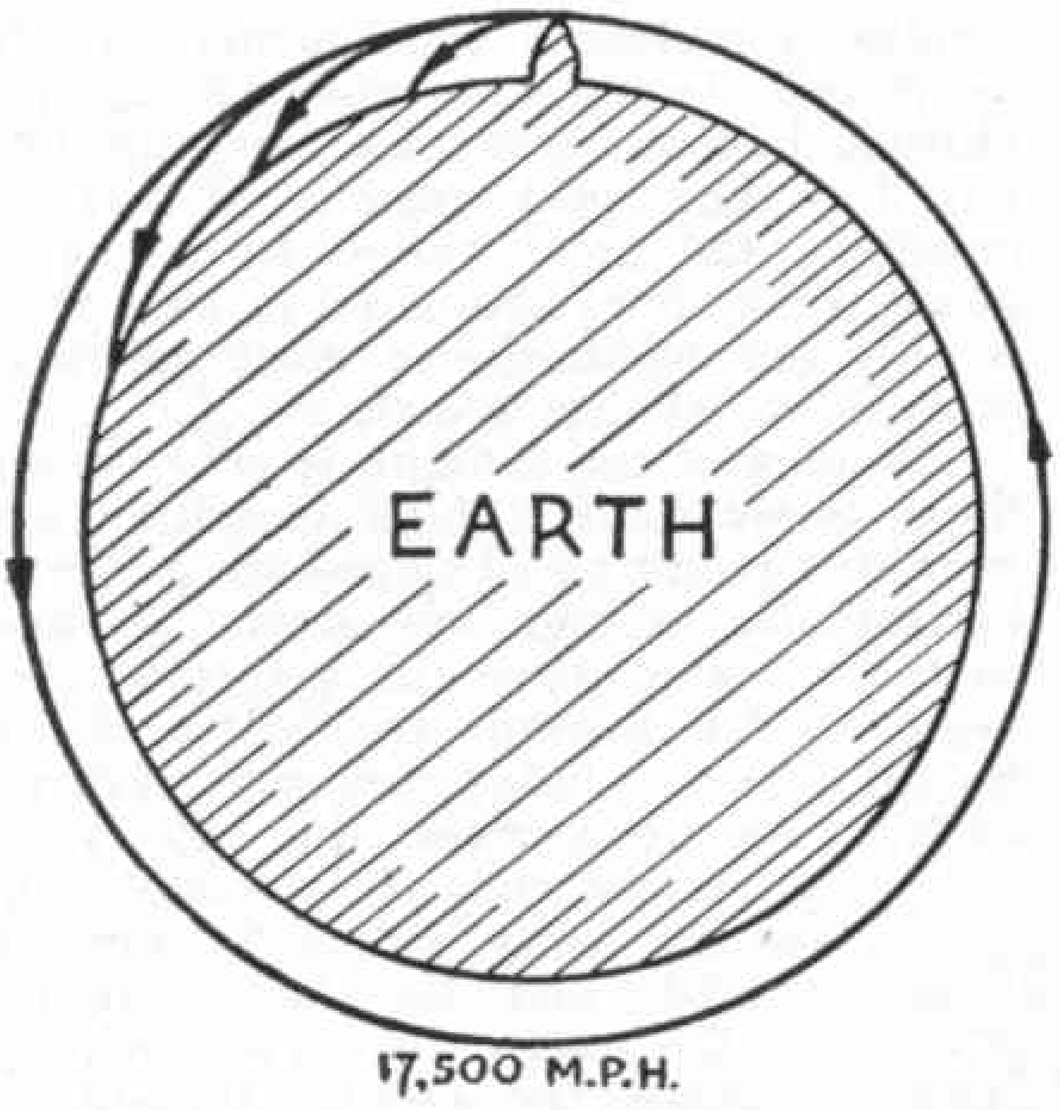
The great difficulty with rocket research is that the payload of instruments is kept above the appreciable atmosphere for such a short time. This is indeed only two or three minutes, which is not enough for certain important experiments to be performed. In the lower atmosphere, high-altitude balloons overcome this difficulty, but for the upper regions of the air envelope, the great region extending to nearly 1,000 miles above the surface, there is only one solution—we must use what is called a satellite vehicle.

The idea of the satellite is very simple. Suppose we have a high mountain and from its summit small bodies are projected horizontally at high velocities. As soon as these bodies leave the projector they begin to fall towards the centre of the Earth. At some point they will reach the surface. As we increase the velocity of projection they move further and further away before hitting the ground, and the fact that the Earth's surface is curved helps to increase the range. Finally we shall reach one velocity of projection at which a body is pulled down by gravity in a curve that exactly corresponds to the curve of the Earth's surface. A body sent out with this speed will never reach the ground, but will travel right around the Earth. In fact, it will become a satellite. A speed of 17,500 miles an hour is needed to do this.

The satellite must be started off sufficiently high in the atmosphere for friction to be negligible. Of course we have not a mountain high enough for this purpose, because even the summit of Mount Everest is still deep within the atmosphere, where air friction will retard the body. If this is sent out high enough, it will make many circuits of the Earth before it is slowed down by the tenuous air. If we could place it *very* high, say about 1,000 miles, it would be in the vacuum

of interplanetary space and could probably revolve indefinitely like an artificial moon.

So our first problem in establishing a satellite vehicle is to get it high enough in the Earth's atmosphere, probably about 200 or 300 miles above the surface.



If a body is fired horizontally from the top of an imaginary mountain poking outside the Earth's atmosphere its range increases with its speed. At 17,500 m.p.h. it will circle the Earth.

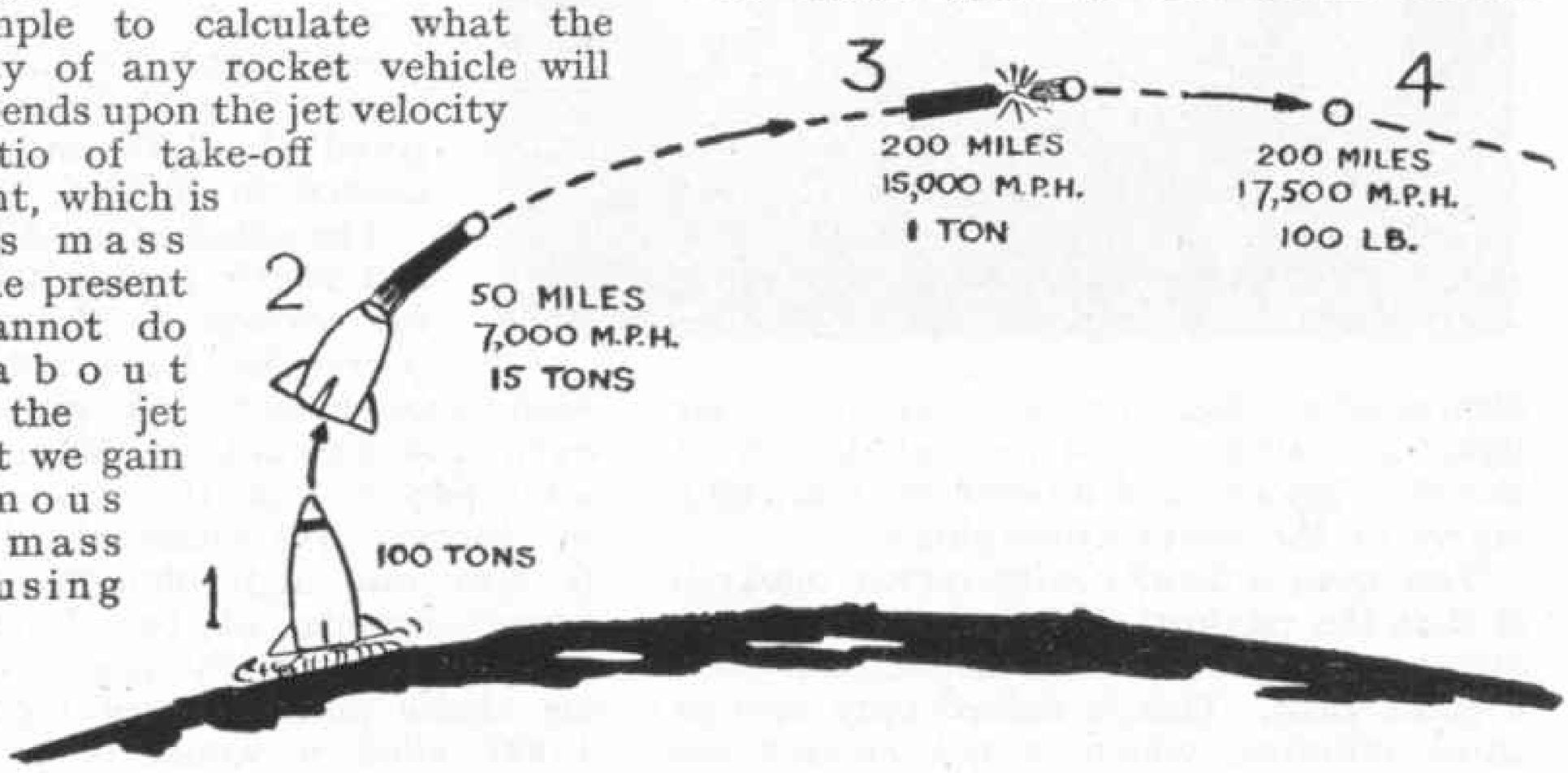
A rocket is used to do this. When it reaches that level it must be accelerated fast enough for it to travel in the orbit, that is to a speed of about 17,500 miles an hour. For this again we rely upon a rocket motor. In fact two manœuvres are combined and one rocket does the trick by having its trajectory programmed to bring it into a horizontal path at a sufficient altitude ready for the satellite to be released.

It is simple to calculate what the final velocity of any rocket vehicle will be, for it depends upon the jet velocity and the ratio of take-off to dry weight, which is known as mass ratio. At the present time we cannot do much about improving the jet velocity, but we gain an enormous effective mass ratio by using what is known as the step principle, in which rockets are carried one within the other. To place a small payload of about 100 pounds into the satellite orbit at 300 miles it is found that a three-step rocket having a take-off weight of at least 100 tons is needed. This is the type of thing envisaged in the Washington project.

A large three-step military rocket will be modified so that a final high performance third stage will include the 21 in. diameter satellite sphere. This small sphere will be the payload, which alone will enter into the circular orbit. All the rest of the rocket stages will fall back to the Earth, where they will either be recovered by parachute or else broken up by explosives so that they fall in the form of small particles that are not dangerous.

The instrumented sphere will have to be very sturdily built. Its instruments will incorporate transistors and printed circuits, which are wonderfully space saving in comparison with radio valves and ordinary wiring. The whole will be bonded into a solid by means of plastic fillers, which will solidify and give the satellite great mechanical strength. It will then be able to resist the high accelerations experienced during the take off of the large rocket. The outer surface of the sphere will be covered with cells consisting of a specially developed semi-conductor capable of converting solar radiation directly into electrical energy. This solar converter will supply power to the instruments, and to the telemetering transmitter that will send information by radio from the satellite to a chain of receiving stations erected around the Earth.

The satellite will be placed in an orbit that will pass over the Earth's poles. This will mean that as the Earth rotates



Stages in setting up a satellite.

beneath, the satellite will gradually pass over the whole of its surface. The satellite will pass right round the Earth in about 90 minutes. In that short time it will be able to take measurements of the magnetic field all around the Earth, and give information on the northern and southern lights and on the way in which cosmic ray primary particles are deflected by the magnetic field.

At 200 miles the satellite will not remain in its orbit for a long period of time. There is still sufficient air at that height to slow it down, and after just 70 days it will descend low enough in the atmosphere, about 60 miles above the surface, to burn up like some brilliant meteor.

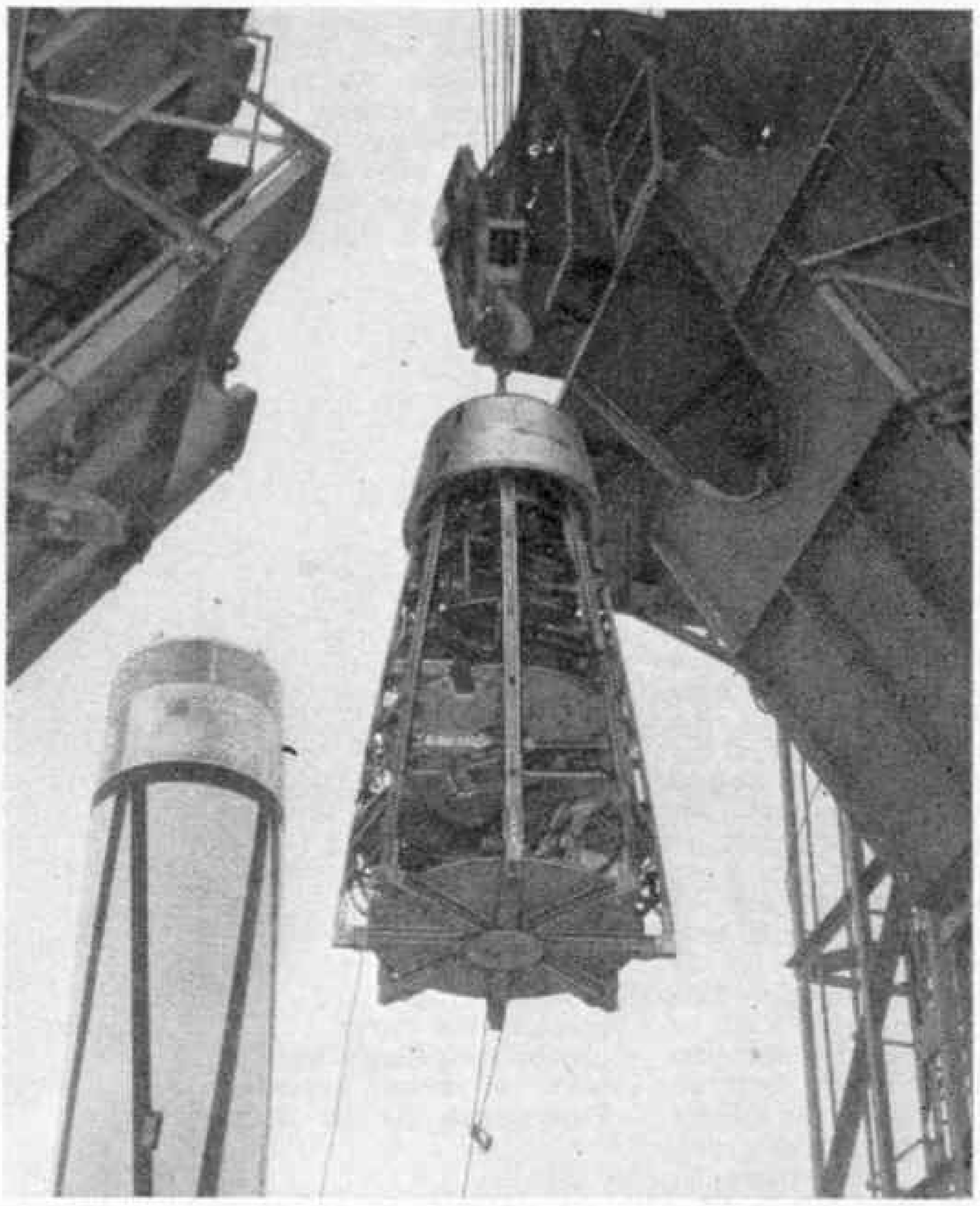
The satellite will be visible from the surface of the Earth. In can even be picked up by the naked eye, if you know where to look and it happens to be close to the zenith, which is the point exactly overhead, an hour after sunset In addition to the mere satisfaction of seeing the Earth satellite, visual observations will have an important geodetic use. They will enable triangulations to be made more accurately over great ocean distances, so that we shall have more accurate maps of the Earth's surface. The distance across the Atlantic Ocean will be determined to within 100 yards, ten times more accurately than at present.

But the most important thing about an instrumented satellite is what it foreshadows. When man has placed an orbiting body in position he will have taken his first step into space. A tremendous amount of research will remain to be done before manned voyages can be made to the Moon and the other planets, but these will surely follow during the next hundred years.

The first stage in the conquest of interplanetary space will be the development of today's high-altitude rocket planes so that they can travel faster and at greater altitudes. Within the next twenty-five years a multi-step rocket plane will probably reach a speed great enough for it to enter a satellite orbit. It will only make a few revolutions around the Earth before decelerating to land back on the surface, but from experience gained with it a manned satellite will be planned.

This will require that a number of rockets are fired into an orbit so that their payloads, the prefabricated sections of a spacestation. will circle the Earth all together in a small volume of space. They will not drift apart, and men wearing spacesuits will be able to assemble the station from these sections.

The manned satellite technique is essential if we wish to journey into space to other worlds. Chemical propellants have not sufficient energy to carry a spaceship from the surface of the Earth, to the Moon, to land on the Moon, and to take off again and return safely to Earth. The journey must be made in stages, and for the first of these it will be necessary to refuel a spaceship in an orbit around the Earth.



Hoisting the instrumented nose-cone of a high altitude research rocket into place. It is a section like this, but smaller and ball shaped, that will be fired from a rocket to become a satellite. U.S. Air Force photograph.

The space satellite to be placed in its orbit in 1957, tiny though it will be, will represent the first experiment towards making this possible. And when that technique has been mastered man can have interplanetary travel. It is an exciting and adventurous future which the youth of today can look forward to; truly the promise of a new Elizabethan Age of discovery and exploration unrivalled by anything in past history.

Railway Notes

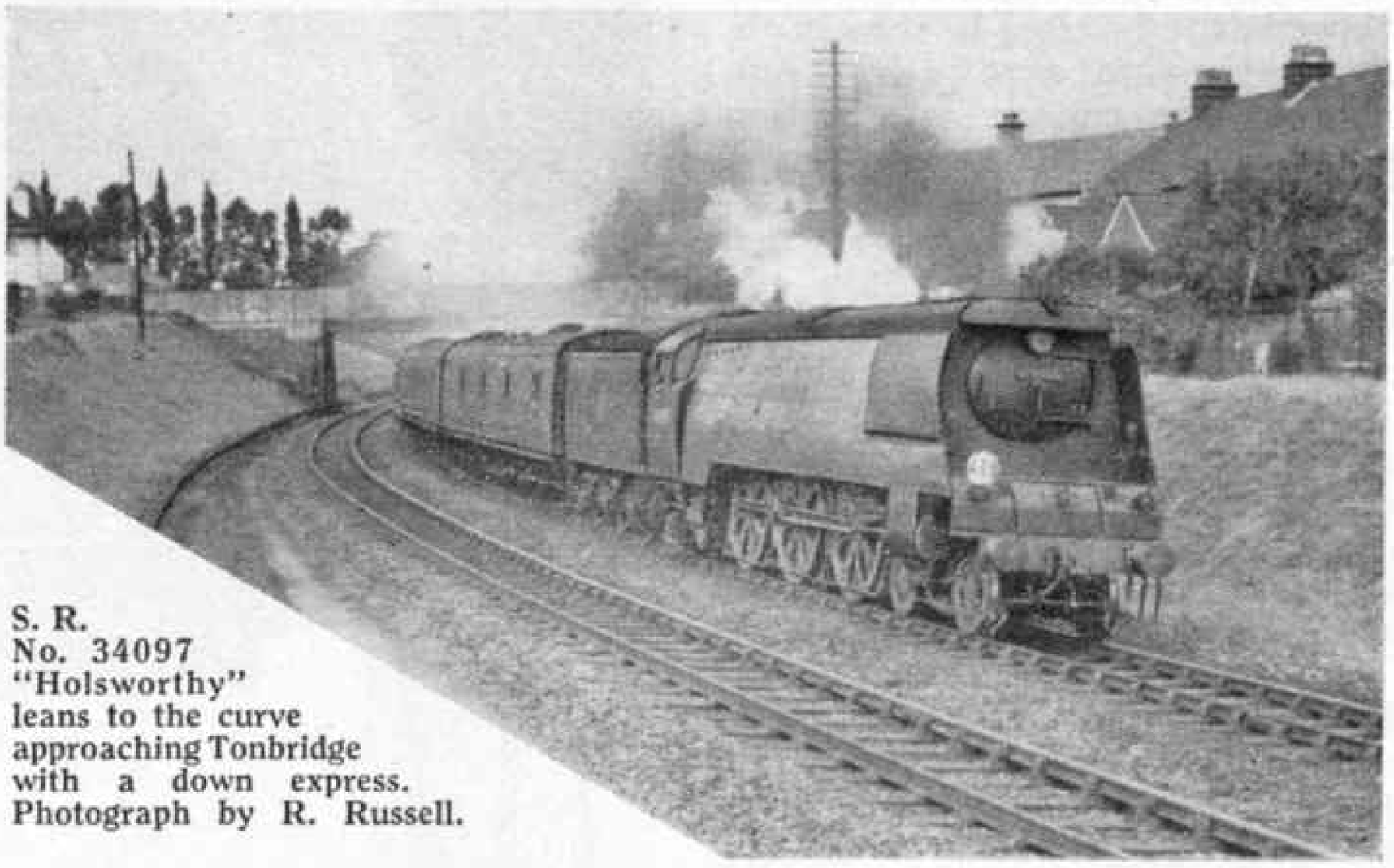
By R. A. H. Weight

New Locomotives Ready and Planned

Fresh construction lately announced includes class 4 4–6–0s Nos. 75065-6 built at Swindon for use on the Southern. The completion of No. 73100 begins a new series of larger class 5 4–6–0s at Doncaster Works. Class 2 2–6–0s Nos. 78045 upward are coming out from Darlington, as well as British Railways-B.T.H. diesel electric shunting locomotives in the 13152-66 range. More of a similar type will probably be put in hand later at Darlington, together with 10 2–6–2T engines of class 2 beginning with No. 84020. More diesel shunters have emerged from Derby Works, also diesel railcars. Class 5 4–6–0 steam locomotive construction has been continuing with the 73080 series; and there has been other new building at Brighton and elsewhere of standard types which have been previously described.

Eastern and North Eastern Express Travels

I went down as far as Peterborough by the 1.18 p.m. express from King's Cross to Leeds and Bradford. A1 4–6–2, 60130, *Kestrel*, with 13 heavy coaches well filled, weighing about 475 tons behind the tender, made an excellent climb of the long rise from Wood Green to Potters Bar, touching 61 m.p.h. at the foot then accelerating from 57 to 60 about half way up, dropping to 48 on the steeper last 1½ miles. With a subsequent maximum of 80 m.p.h. and an easy finish, the arrival at Peterborough, 76½ miles, was made in 79¾ min. compared with 84 allowed, so as we had started 2¼ min. late *Kestrel*, working through to Leeds, was actually 2 min. early there.



S. R. No. 34097 "Holsworthy" leans to the curve approaching Tonbridge with a down express. Photograph by R. Russell.

In a rather similar southbound express, the *White Rose*, a handsome 12-coach train of new stock, about 400 tons, I logged extremely lively running behind A4 No. 60033, *Seagull*, the engine that figured in many *Elizabethan* fast London-Edinburgh runs last summer. We passed Huntingdon, 17½ miles in 17½ min. from the Peterborough start at 85 m.p.h., having previously attained 75 on the level and then surmounted Abbots Ripton bank at a minimum of 68.

High speeds continued, with the first 29 miles covered in just over 26 min., but several signal slowings now occurred through Sandy, Hitchin and Welwyn Garden City respectively. Even so *Seagull* could easily have been in King's Cross to time, although starting 5 min. late on a busy day, when we sped past New Barnet, 67¼ miles in 68¾ min. But there were other trains ahead and with platforms in the terminus not yet clear, we had to wait our turn at several suburban signal posts.

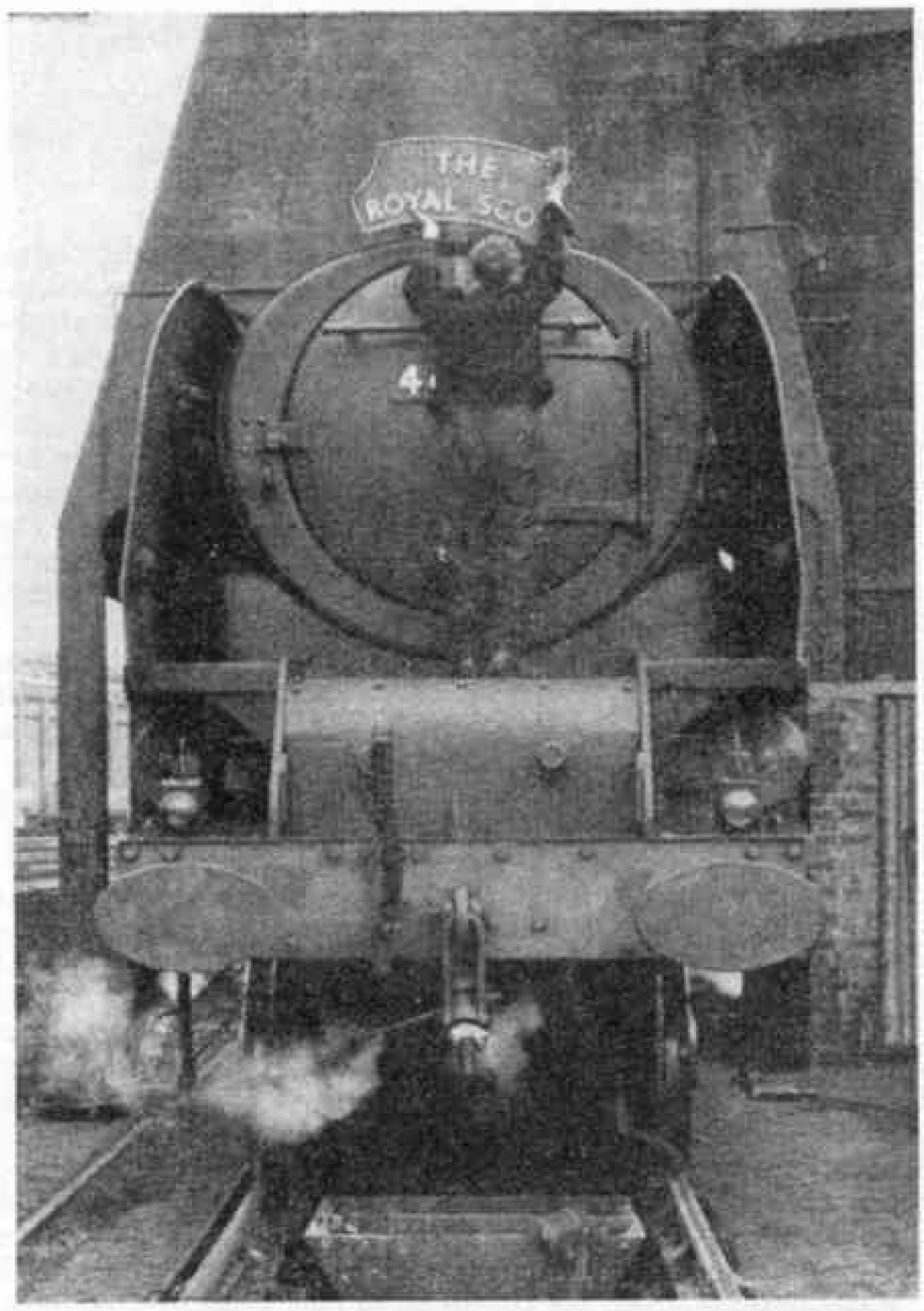
From a good friend's recordings I learned that on a summer Saturday the 3.20 p.m. King's Cross-Sunderland and Newcastle express ran to Grantham, the first stop, 105½ miles, with 12 on or 415 tons in 113½ min. This was well under the 117-min. schedule, in spite of severe slacks outside Peterborough, also over track repair work at Little Bytham, well up the long rise to Stoke summit. Over varying gradients from London to Yaxley 72½ miles were covered in 70½ min. with another maximum of 85 m.p.h. Later on the same run, along the straight and easily graded York-Darlington stretch, the scene of much high speed with very fast timings, A4 No. 60021 *Wild Swan* with the load reduced to 9 coaches ran steadily at between 60 and 80 m.p.h., reaching Darlington nicely within the sharp allowance of 43 min. for 44 miles start to stop.

The fastest train of the week from Cambridge to London on Sunday evening may easily furnish some thrills, such as were provided by Britannia 4–6–2, 70042, *Lord Roberts*, with 9 on, about 305 tons, in passing Bishops Stortford, 25¼ miles from the start in 24¾ min. with maximum speeds over 70 and an uphill minimum of 60 at Elsenham, followed by lively travel right down to the London suburbs near Ponders End. It is a very tortuous finish from Tottenham, with curves and suburban congestion, making the 64-min. timing more difficult than it looks on paper perhaps. On this occasion, if a clearer road had been available over the last few miles, the 55¾ miles could certainly have been covered in little more than an hour. A good many years ago I travelled on a test run in the opposite direction from Liverpool Street to Cambridge behind the pioneer B17 3-cylinder 4–6–0, *Sandringham*, hauling 235 tons, when the overall time was 62½ min. including several slowings due to bridge or signal repairs in the suburban area. The subsequent fastest regular schedule operated for some time before the outbreak of war in 1939 was 65 minutes.

"Northern Dales" Rail Tour

Superbly organised by the Stephenson Locomotive Society (North Western Area) and the Manchester Locomotive Society for their enthusiast members, families and friends in conjunction with the London Midland, and North Eastern Regions, British Railways, last September, a 7-coach special train formed of centre gangway stock with tables and including a well stocked cafeteria car, took us from Manchester through Blackburn and Hellifield, where the train filled up, to Ingleton, Tebay (on the West Coast main line not very far from Shap summit) and Kirkby Stephen, where the locomotive shed was visited, in a mountainous region. and so across the spectacular moorland line over Stainmoor summit 1,378 ft. above sea level, to North Road, Darlington.

After a 2-hr. interval for a tour of Darlington Works we proceeded as far as now possible along the original



The end of the run. No. 46241 "City of Edinburgh" has its headboard removed on arrival at Camden. Photograph by G. Clarke.

route of the 1825 Stockton and Darlington Railway, crossing the East Coast main line tracks on the level, thence to Eaglescliffe and Northallerton, reversing at each of those junctions. Next we went across the pretty, lengthy Wensleydale single-line branch to Hawes before climbing to the bleak Garsdale main line station, L.M.R., near the highest point reached by any trunk railway in England at an altitude of about 1,166 ft. Many precautions have to be taken in these parts against snowdrifts, severe gales or frost, but even so the elements sometimes take the upper hand and cause a hold-up of traffic, in spite of stout efforts to combat them. As dusk was falling, Compound 4–4–0 No. 41102, which had also hauled us from Manchester to Tebay in the morning, descended the 1 in 100 gradient on the St. Pancras main line through wild and magnificent scenery at round about 70 m.p.h. whence we returned to Hellifield, Blackburn, Bolton and Manchester, Victoria.

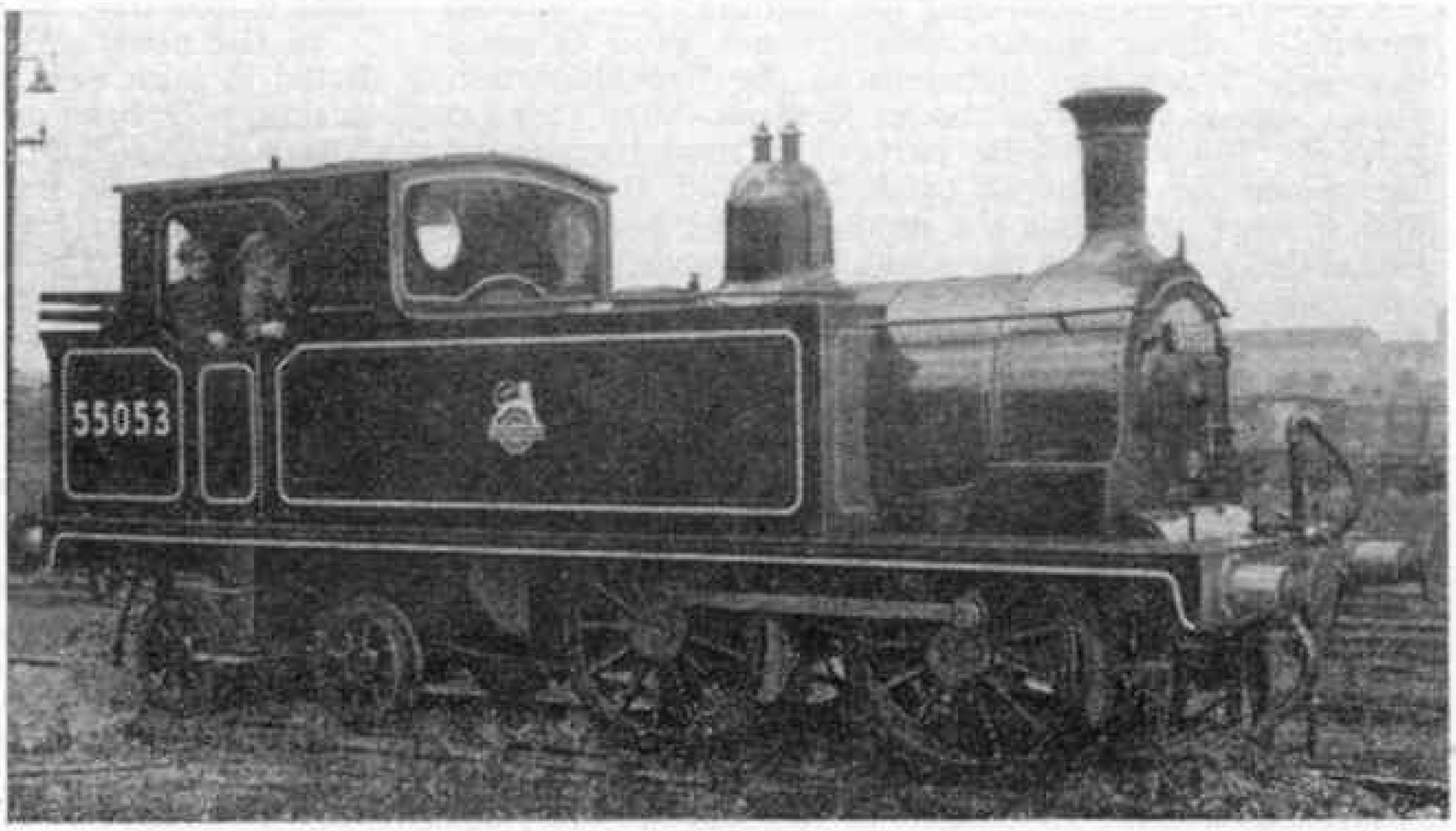
We had travelled over specially attractive lines not now ordinarily available to passengers; also over some of the most lofty viaducts and stretches of railway providing wonderful sightseeing in Lancashire, Yorkshire, Westmorland, Co. Durham, with weather mostly kind. The special was hauled in stages by class 2 2–6–0, 46478 assisted by J21 0–6–0, 65061; by A8 4–6–2T 69855, both alone and in company with D20 4–4–0, 62360; and by the latter veteran express locomotive coupled to No. 41102 mentioned above. An impressive headboard was carried by the engines and a comprehensive itinerary handed to each passenger.

Scottish Tidings

Five diesel-hydraulic light shunting locomotives developing 200 h.p. are coming into service in the Edinburgh and Thornton districts. Also due for completion this year are 20 of the larger standard 350 h.p. diesel-electric shunters to replace Q1, J69 or J88 tanks, and be allocated to Eastfield, Parkhead, St. Rollox, Polmadie, Motherwell, and Hamilton depots, around Glasgow. Planned for next year are 13 more of the same type; 12 of the 200 h.p. diesel shunting engines; and six and four-car multiple unit diesel passenger sets for Edinburgh-Glasgow services to come from Swindon Works, each power unit having two 150 h.p. A.E.C. engines with mechanical transmission. Storage and servicing accommodation for the diesel trains is to be installed at Leith, Central, station. The special facilities to be provided there will include examination pits both between and alongside the tracks and will make it the first diesel depot of its kind in the country.

Winter time-tables include a new evening fast train on ordinary weekdays from Glasgow to Inverness, attaching through portion from Edinburgh at Perth, and conveying through carriages for the Forres line. The 5.5 p.m. Sunday evening service from Glasgow to Perth and Aberdeen introduced last spring is continuing throughout the winter. The morning expresses from Glasgow and Edinburgh to Manchester and Liverpool have been accelerated; there are some quicker timings for certain trains on the Edinburgh (Waverley) to King's Cross service and some decidedly fast bookings from Carstairs or Symington over Beattock and down to Carlisle.

Observations along the spectacular West Highland line found Stanier or B.R. class 5 4–6–0s sharing a good deal of the hard work with K1, K2 and a few K4 2–6–0s, also B1 4–6–0s. Owing to severity of the grading there was a good deal of assorted double-heading. Very comfortable carriages are provided. Though there are still some former Great North of Scotland 4–4–0s about B1 and "Black Five" 4–6–0s, B.R. 2–6–4Ts, Glen D35 and class 2 L.M.R. 4–4–0s, as well as K2 or smaller Moguls, were handling nearly all the passenger or miscellaneous trains observed by Mr. L. J. Burley along the lines radiating from Aberdeen towards Inverness, Elgin, Ballater, Buchan, etc. It has been a busy summer on the Highland and Anglo-Scottish main lines. Gresley and L.N.E.R. type Pacifics are much in evidence throughout the East Coast route.



B.R. No. 55053, one of the two surviving locomotives of the former Highland Railway still in service. Photograph by C. Lawson Kerr.

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE EXPLORATION OF SPACE"

By ARTHUR C. CLARKE
(Temple Press, 8/- net)

Here is a book that I have enjoyed reading, and from the number of copies already sold, it is quite clearly a book that many more also have found attractive. The subject alone is sufficient to tempt them, now that we are beginning to look beyond the clouds, to the orbits in which artificial satellites will be turning in a few years, to the Moon, and to the planets. Mr. Clarke even contemplates journeys to the stars, although on an ordinary time reckoning it would take more than 70,000 years to reach the nearest known! As readers will find, however, this time scale would be modified considerably by the speed of travel to distant stars, as Einstein pointed out when he developed his special theory of relativity.

This almost sounds as if the book were technical and difficult, but that is not the case at all. Anyone who wishes to have a clear general idea of what is involved in *The Exploration of Space* will find the account given by Mr. Clarke excellent. Many of our ideas about space travel, and about the bodies we hope to reach in the coming years, are of course guesswork, but there are sound foundations for the plans that are beginning to be made to achieve space exploration, and these are well dealt with in the earlier chapters of this account. In them we learn how we shall be able to escape the pull of the Earth, to reach the distances at which an artificial satellite can serve as a refuelling station. Then we see what a spaceship will probably be like, and what is to be expected when we land on the Moon, on Venus or on Mars.

The character of space stations is the subject of a special chapter, in which reference is made to the possibility of using such stations for controlling climate and conditions generally on the Earth itself and actually as new worlds in which the inhabitants could prosper and develop their own cultures.

Mr. Clarke includes many simple diagrams that illustrate very well the arguments on which his story is based, and there are also a series of plates, showing scenes of an imaginary nature, set in the future, that give slightly dramatic impressions which may well become familiar to our descendants.

"THE ROYAL YACHT 'BRITANNIA'"

"THE BRISTOL BRITANNIA TURPOPROP"

(Brockhampton Press, 5/- each)

Cardboard model-building has become very popular, especially among readers who are not good at scale drawing. These two additions to the Brockhampton Press series press-out books feature very topical subjects. In each book the parts of the model concerned are printed in colour on thick card, and already cut and creased. All that the model-builder has to do is to carefully push the parts out of the page, and then assemble them in accordance with the instructions given.

The pages of model parts are interleaved with literary pages giving, in the case of the Royal Yacht book, an interesting description of the vessel and a brief account of other Royal yachts. There is a full-page cutaway drawing with a numbered list of the main features of the *Britannia*. In the book on the Britannia Turboprop, the literary pages tell the story of this, Britain's biggest air liner.

"'THE AEROPLANE' REVIEW OF HELICOPTER DEVELOPMENTS"

(Temple Press)

Helicopters are so much in the news that this reprint from the well-known aeronautical weekly *The Aeroplane* of a recent review of helicopter developments during the past 20 years or so, will be welcomed by readers who are aircraft enthusiasts. It includes a comprehensive selection of technical data, three-view drawings and half-tone illustrations of the world's helicopters. The pace and extent of helicopter development have been very closely governed by the special power-plants that have been made available, and an article in this booklet describes in some detail the problems associated with the design of helicopter power systems. Of special interest are the large detailed cutaway drawings of three well-known British rotary-wing craft—the Westland Whirlwind, British Sycamore and Saunders-Roe Skeeter.

The booklet can be ordered from any newsagent or bookseller, price 3/6, or obtained direct from the publishers, Temple Press Ltd., Bowling Green Lane, London E.C.1, price 3/9 including postage.

"LOCOMOTIVE STOCK ALTERATIONS 1952-1954"

Railway Correspondence and Travel Society

The popularity of the locomotive stock books published by the Railway Correspondence and Travel Society shows no signs of decreasing, and this latest publication will keep the enthusiast up-to-date. It contains 32 pages of information, which reviews British Railway practice during recent years and gives details of new engines built and those withdrawn from service. New named engines and renumberings of existing locomotives are dealt with fully, followed by details of rebuildings and revised classifications for power purposes. The railways of Eire and Northern Ireland, together with a small number of British independent lines, are included in the range of the book.

There are 89 illustrations, which include a representative of every class that became extinct during the period covered. If the book is used in conjunction with previous editions and with other R.C.T.S. booklets, a complete record from 1934 to the present time is provided. The R.C.T.S. is to be congratulated on the excellence of its unique work in compiling such records.

Copies of the booklet may be obtained from the Hon. Publications Officer, Mr. D. H. Wakely, 18 Holland Avenue, Cheam, Surrey, price 3/6, post free.

"THE ABC OF MIDLAND RED BUSES AND COACHES"

(Ian Allan, 2/-)

This is the fourth edition of a popular ABC that has been produced with the co-operation of the Birmingham and Midland Motor Omnibus Company Ltd., a concern that is now over 50 years old.

In the usual ABC style, the buses and coaches are listed in numerical order according to their types and makes, with brief descriptive notes heading each group. There is a section listing the garages and workshops, with their code letters, and the extensive system of routes and services, which are shown on a useful folding map. The bus enthusiast will find much to interest him in this handy booklet, while of course it is indispensable to the "Midland Red" fan.

"THE ABC OF BRITISH LORRIES"

(Ian Allan, 2/-)

This is a later edition of the ABC reviewed in the *M.M.* in November of last year. Steady progress in commercial vehicles is the order of the day and the book records the latest details of 26 different makes. The road transport enthusiast and observer will find great interest in the descriptions, not only of hefty 8-wheelers and various articulateds, but also of the smaller and no less useful vans and lighter types. Specialised vehicles such as tankers and tippers have their due share of attention. The book includes tabled specifications of the various models of different makes, which will appeal specially to the statistical wizards among road traffic observers.

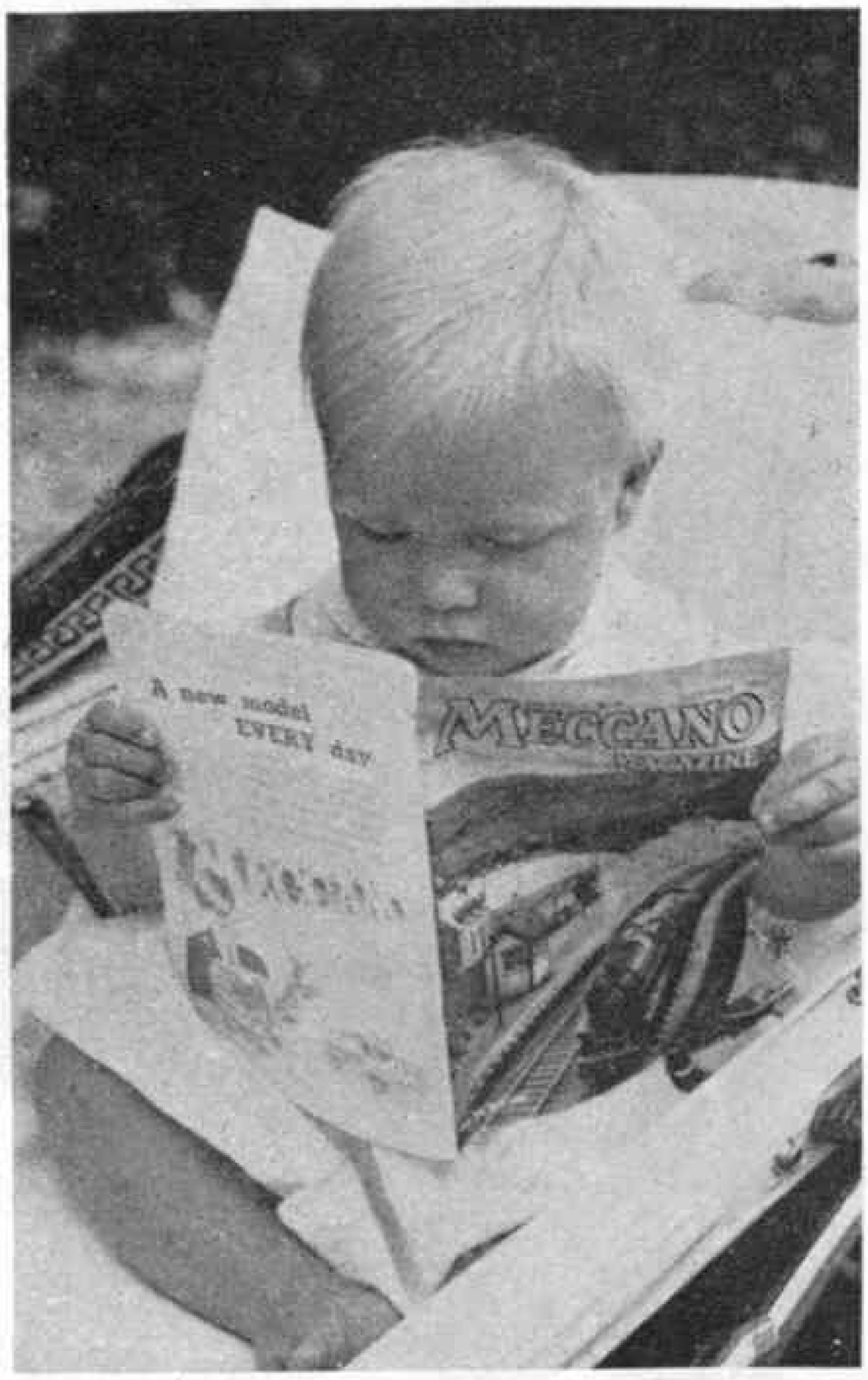
MECCANO MAGAZINE

Junior Section

YOUTH AND AGE

THE young man seen in the picture on the right is obviously finding something in his copy of the *M.M.* that arouses his interest. I suppose it is a picture, as he is only 12 months old. He is Martin Reiner, whose home is in Reading, and I am wondering if he is my youngest "reader."

The ages of Magazine readers always interest me very greatly, because they go to such extremes! I know that there are still readers who knew the Magazine in its earlier days, and like Martin Reiner, many of them began when they could only



Martin Reiner makes a good start with the M.M. at the early age of 12 months.

make something of the pictures. Later they grew up to become regular readers, in the full sense of the words, like the other reader, John E. Evans of Cardiff, whose picture appears on this page.

Thoughts of one who is probably my youngest reader bring to mind Sr. Ing V. M. Quesada, who lives in Lima, Peru, for he may be my oldest. Although he is well over 80 years of age, Sr. Quesada is an active model-builder. Those of you who can turn to page 415 of the *M.M.* for August 1953 will see his portrait, for he was a prize-winner in the International Model-Building Competition of 1952–53. There may be a reader who is older, and if so I should certainly like to know more about him!

So the Magazine has young readers and old readers, and older readers, judging by the letters I receive from them, are all young in spirit and full of enterprise.

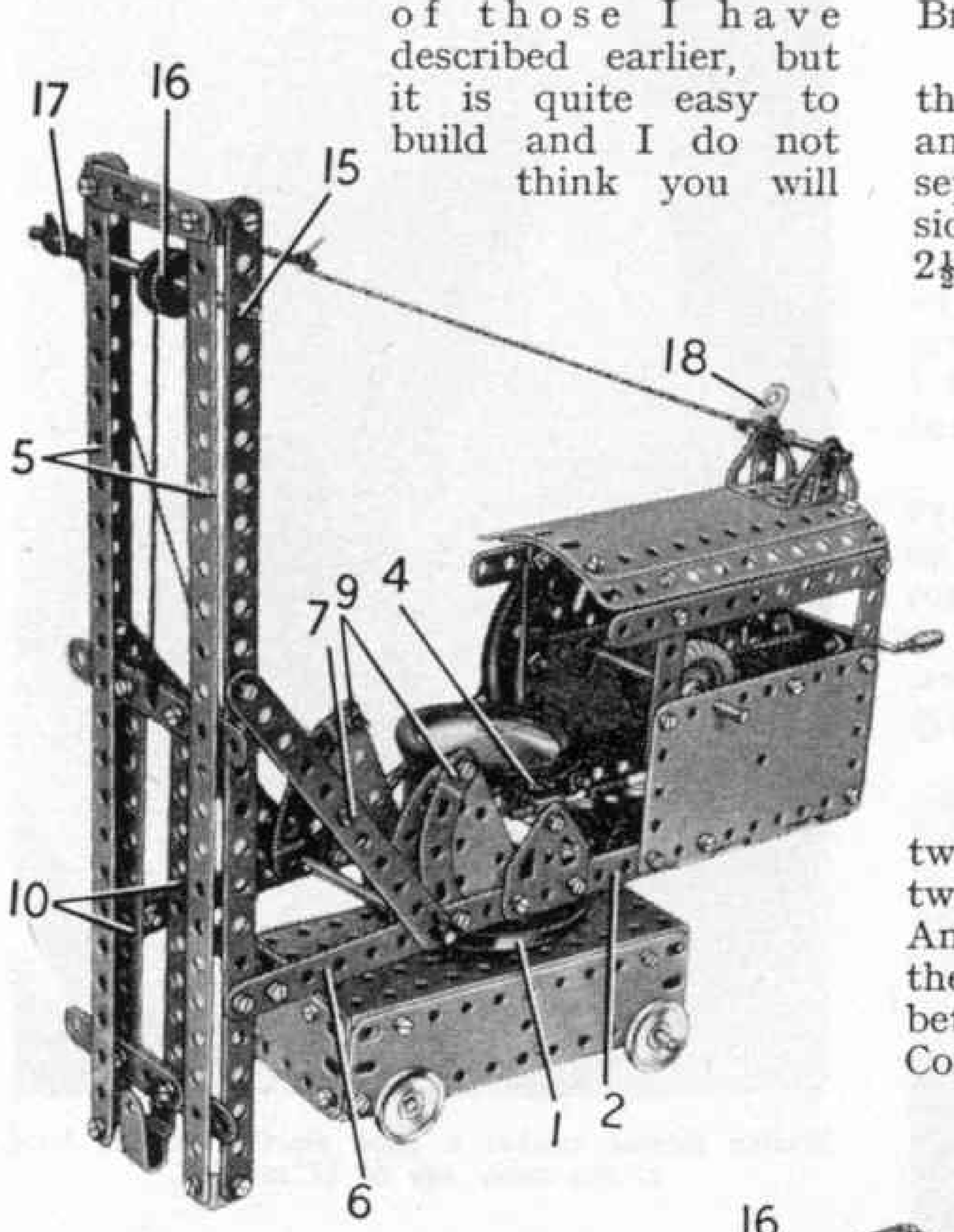
THE EDITOR.

John Evans has his photograph taken with "Western Star," a Britannia that has brought a Liverpool train to Cardiff.

Easy Model-Building

Spanner's Special Section for Juniors

THE new model I have designed for you this month is built from Outfit No. 4. It is a little larger than some of those I have described earlier, but it is quite easy to build and I do not think you will have any difficulty if you examine the illustrations and follow the instructions carefully.



No. 1. This fine model of a Mobile Pile Driver is fitted with a simple intermittent drive device that raises and lowers the ram automatically.

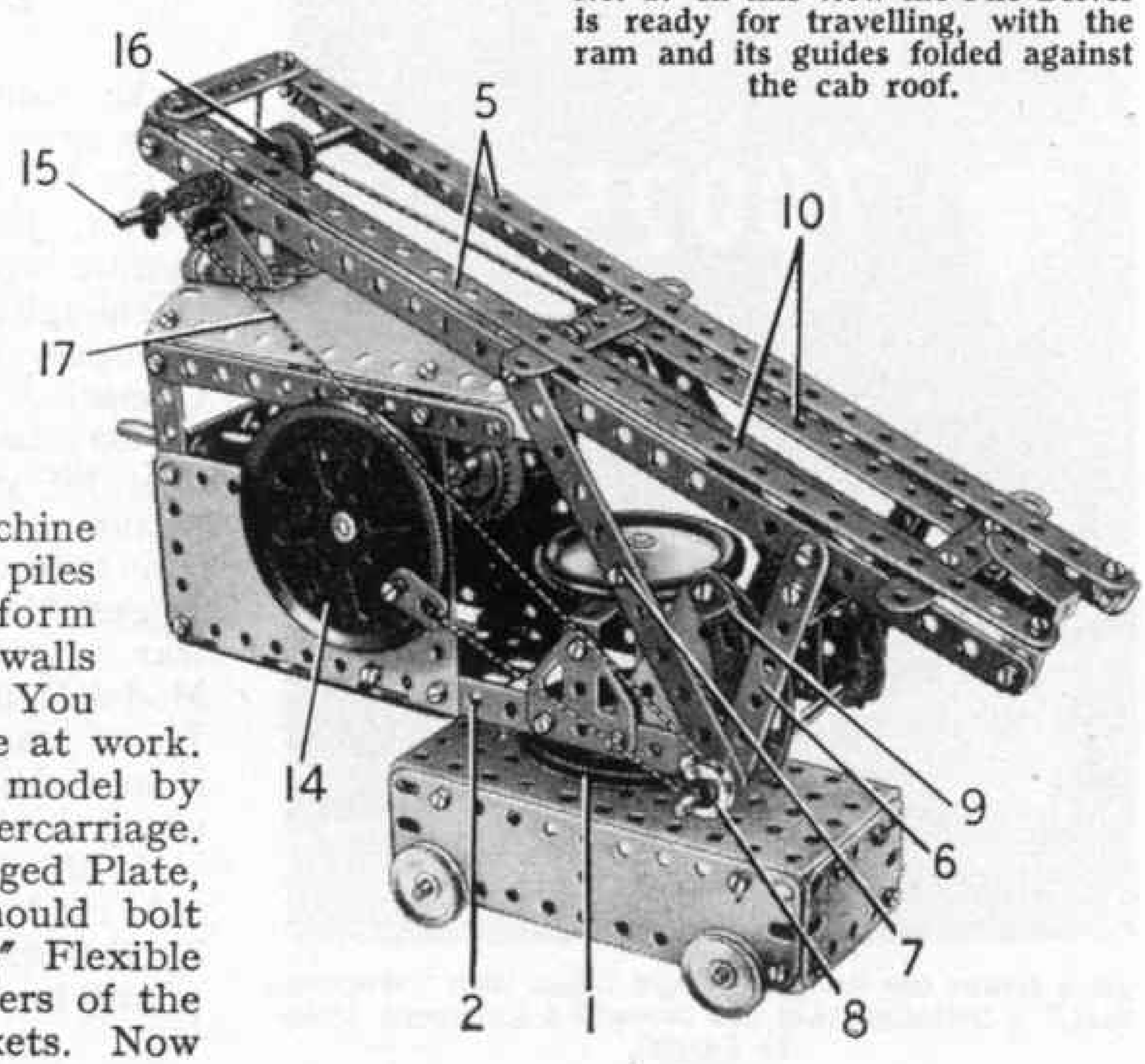
The model is a pile driver and is based on a type of machine used for forcing wood or metal piles deep into the ground to form foundations for buildings, sea walls and other constructional works. You have probably seen one of these at work.

You can begin building the model by making the wheeled base or undercarriage. This consists of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate, to the sides of which you should bolt two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates. Connect the lower corners of the Flexible Plates by Angle Brackets. Now fix the wheels in pairs on a 4" and a $3\frac{1}{2}''$ Rod, and then attach a 3" Pulley 1 to the top of the base by two $\frac{1}{2}''$ Reversed Angle Brackets.

To make each side of the cab withdraw the centre pin from a Hinged Flat Plate and then use the halves of the Plate separately. Bolt a $5\frac{1}{2}''$ Strip 2 to each side and then connect the sides by two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips at the back and by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 3 (Fig. 3). Bolt a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 4 between two Flat Trunnions. Now pass a Rod fitted with a Road Wheel at its upper end through this Double Angle Strip and through the Flanged Plate 3. Slip two Wheel Discs over the Rod, and then pass it through the boss of Pulley 1 and through the top of the wheeled base. Fix the Rod in place by tightening the set screw of Pulley 1.

Guides for the pile driver ram are two made-up girders 5. For each of these two $12\frac{1}{2}''$ Strips are connected by two Angle Brackets. Use the slotted holes of the Angle Brackets so as to leave a gap between the Strips of each pair as shown. Connect the girders at the top by a $2\frac{1}{2}''$

No. 2. In this view the Pile Driver is ready for travelling, with the ram and its guides folded against the cab roof.



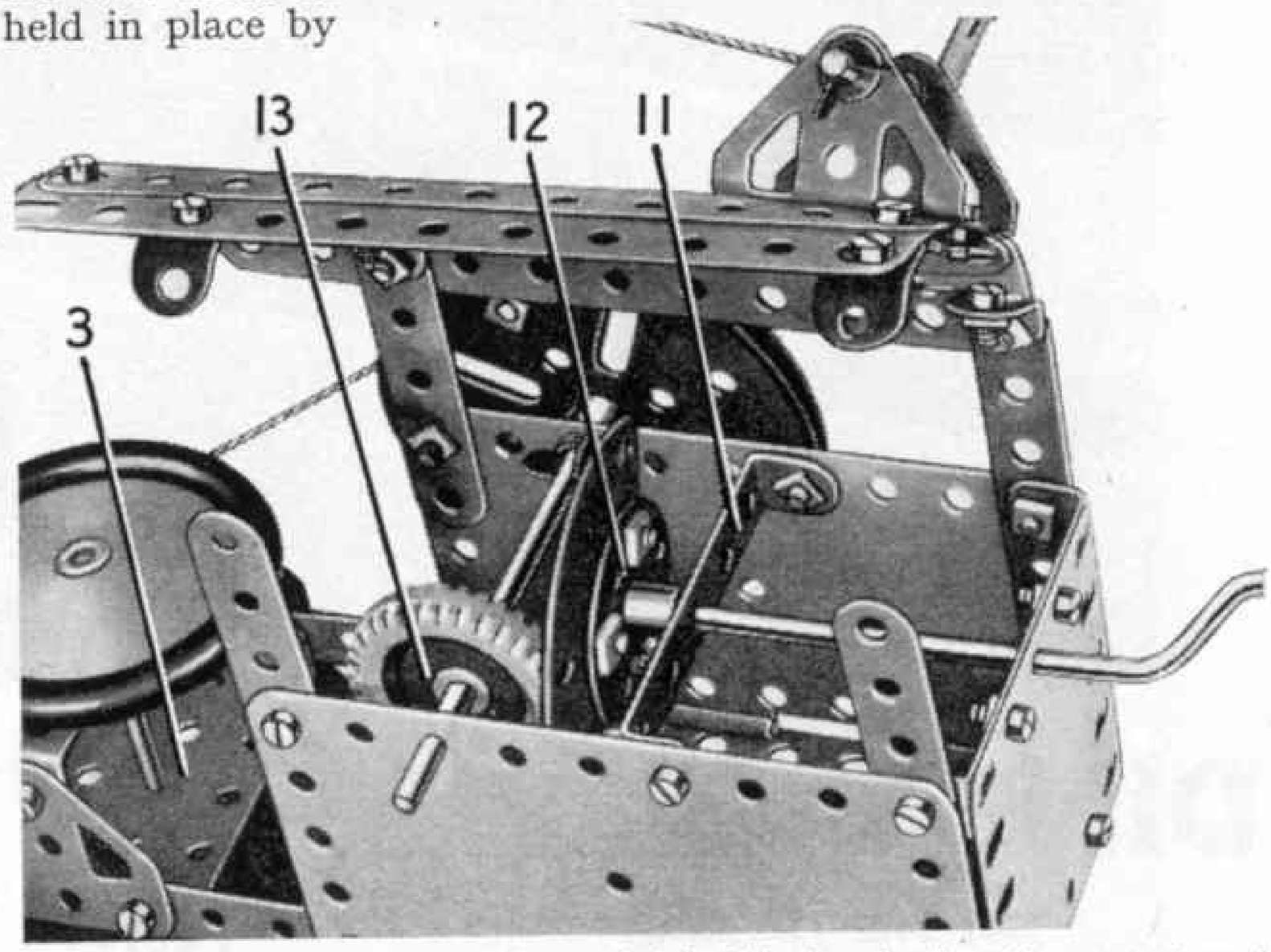
Strip, and to each of them bolt a $3\frac{1}{2}''$ Strip 6. Brace this Strip with a $5\frac{1}{2}''$ Strip fitted with a $\frac{3}{8}''$ Bolt 7. Bolt a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip between the Strips 6. Now pivot the whole unit on a 4" Rod pushed through the end holes of the Strips 2, where it is held in place by Spring Clips. Place a $\frac{1}{2}''$ loose Pulley 8 on this Rod and use a Spring Clip to retain it in place.

When the pile driver is in its operating position the framework for the sliding ram has to be held vertically. This is done by two $2\frac{1}{2}''$ Stepped Curved Strips 9, each of which is lock-nutted to the top ends of a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plate and a $2\frac{1}{2}''$ Stepped Curved Strip bolted to one of the Strips 2. Pass the Curved Strips 9 over the Bolts 7 to lock the frame in position.

You can make the ram from two $5\frac{1}{2}''$ Strips 10. Connect these at their ends by two made-up strips, which you can form from two $2\frac{1}{2}''$ Strips overlapped three holes. To the lower ends of the Strips 10 bolt Fishplates and attach to them a Stepped Bent Strip. The Stepped Bent Strip forms the hammer of the ram. You should arrange the ends of the made-up strips to slide freely in the gaps between the Strips that form the girders 5.

Now mount a Crank Handle freely in the back of the cab and in a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 11 bolted between the sides. Place a Washer on each side between the Double Angle Strip and the cab. Fix a Bush Wheel 12 to the inner end of the Crank Handle and to it bolt a Semi-Circular Plate.

Push a $3\frac{1}{2}''$ Rod through holes in the sides of the cab as shown and on it place a 1" Pulley with Tyre 13 and a 3" Pulley 14. The Semi-Circular Plate should press lightly against the Tyre and if necessary a Washer should be placed between the Bush Wheel and the Double Angle Strip 11.

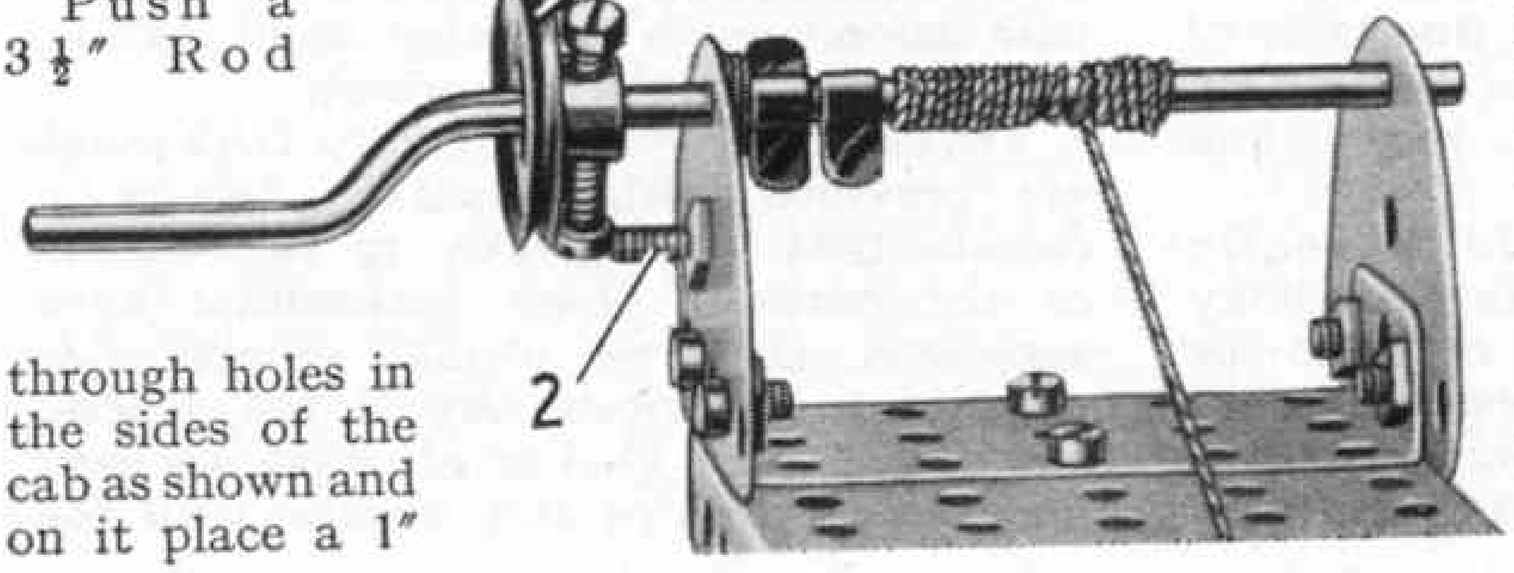


No. 3. The cab roof is partly dismantled in this view to show the arrangement of the intermittent friction drive.

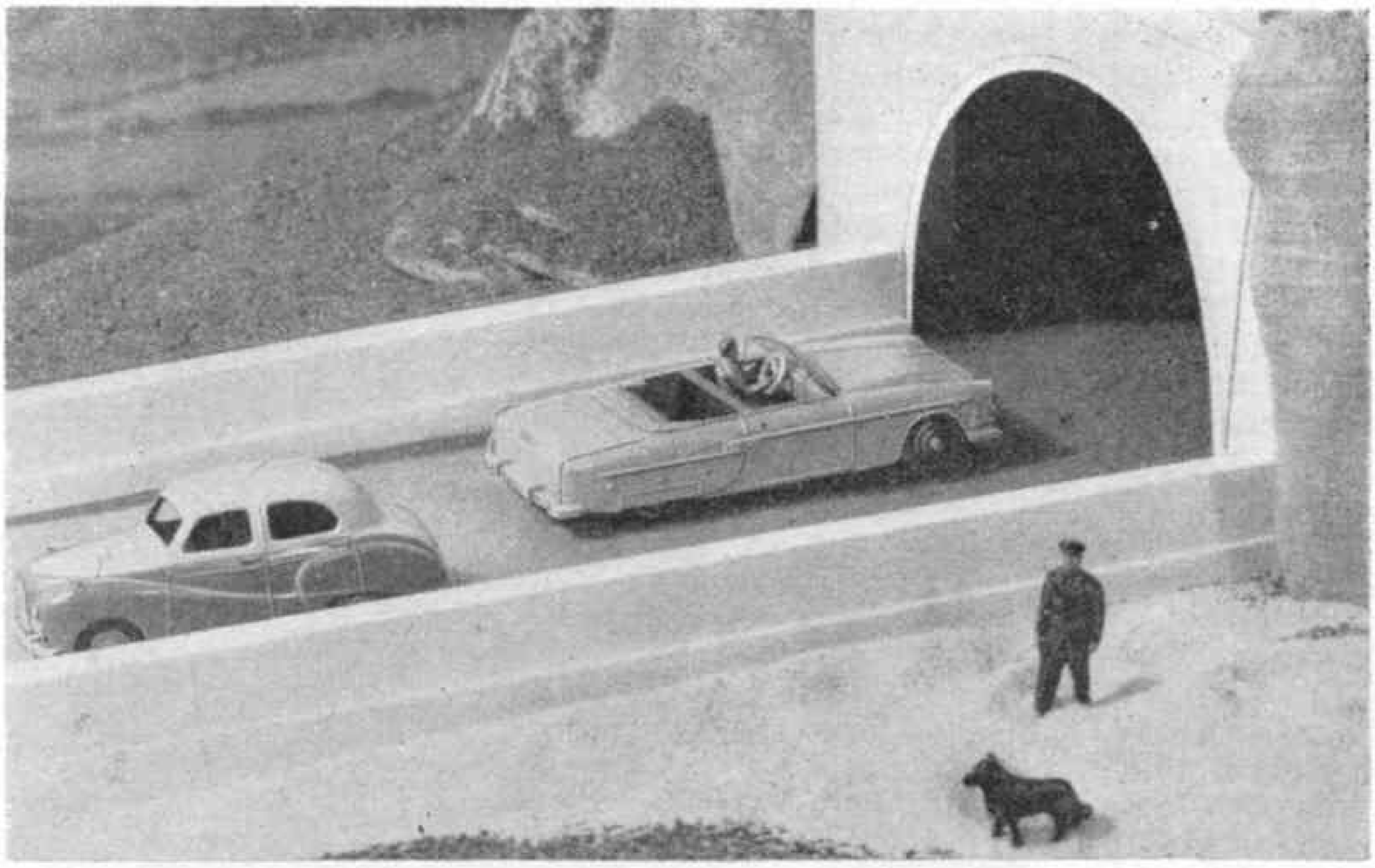
Push a made-up rod 15 through holes at the top of the ram framework. The rod is made from a $3\frac{1}{2}''$ and a $1\frac{1}{2}''$ Rod joined by a Rod Connector, and it carries a simple winding drum 16, which you can form with a Rod and Strip Connector and a Cord Anchoring Spring spaced about $\frac{1}{2}''$ apart, with two $\frac{3}{4}''$ Washers placed between them. Tie a length of Cord to the rod between the Washers and wind it round the rod several times before fastening it to the top of the ram. Tie another length of Cord 17 to rod 15 over the Rod Connector and wind it round several times, but in the *opposite* direction to the Cord already fitted. Now pass the Cord 17 round the Pulley 8 and tie it to a Fishplate pivoted freely on a $\frac{3}{8}''$ Bolt attached to Pulley 14 by two nuts.

If you turn the Crank Handle you will find that the Semi-Circular Plate engages the Tyre on Pulley 13 and thus turns the Rod and Pulley 14. This action unwinds the

(*Continued on page 622*)



No. 4. This simple mechanism shows an easy way to attach Cord to a Crank Handle, and a simple brake mechanism for small models.



DINKY NEWS

Two New Models and a Novel Coast Scene

By **THE TOYMAN**

IN the last two issues of the *M.M.* I have had the pleasant task of telling you about three new Dinky Toys each month. This time I have only two new items to announce, but after a glance at the pictures on these pages I am sure that even the most eager searcher for new models will not be disappointed. These latest Dinky Toys are the Packard Convertible, No. 132, and the Sunbeam Alpine Sports, No. 107, in the range.

It is now some time since a new private car for general motoring was introduced, as readers have not been slow in telling me. On this score alone the Packard is sure of a really enthusiastic welcome, and it will appeal specially to the many collectors who have asked for more American cars in the range. The Sunbeam Alpine Sports is of course a great favourite and is well known for the many successes in rallies and races it has to its credit.

The Sunbeam Alpine is a really outstanding addition to the range of Dinky Toys Sports Cars, as you will see from the picture. It is available in two different colour schemes, blue with cream seats, dashboard and wheels, and red with grey seats and dashboard and stone-coloured wheels. Both schemes are really attractive, and as different competition numbers are provided you can have a team of two Sunbeam Alpines in your miniature sports car races and rallies.

The Packard Convertible is a very attractive addition to the series of Dinky Toys private cars, and one that every enthusiast will want to add to his collection. Like most American cars, the Packard is large, and in its model form is 4½" in length, which makes it one of the biggest cars in the Dinky Toys range. It is a splendid model, beautifully proportioned, with all the main features of the real car clearly and accurately marked. This Dinky Toy also is available in two alternative body colour schemes, in the one case green and in the other stone colour, both with red seats and wheels.

The new Packard Convertible, Dinky Toys No. 132, photographed on a coastal road tunnelled through a headland.

The Sports Cars in the Dinky Toys range are provided with miniature drivers, a feature that adds greatly to the realism of the models. Many enthusiasts have suggested that we should extend this practice to the open cars in the general range, and I am glad to say that we have been able to adopt this scheme with the

The Sunbeam Alpine, one of Britain's most attractive sports cars, as it is represented in the Dinky Toys series.

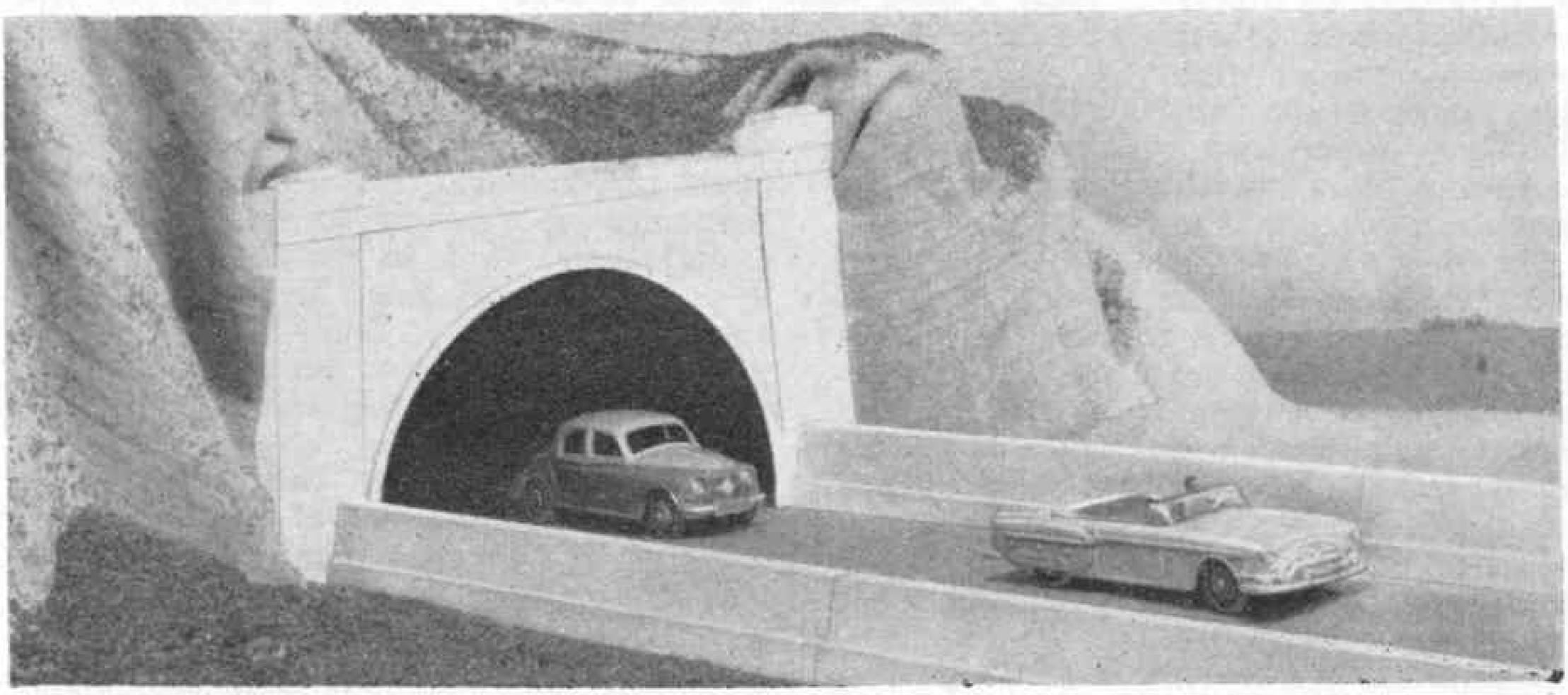
new Packard Convertible. A realistic driver is provided in the new model, seated on the left of course as it is an American car with left-hand drive.

Now for a few notes that I hope will be helpful and of interest to the many Dinky Toys enthusiasts who make a feature of designing layouts and scenes for their models. You will notice that my pictures of the Packard Convertible show it in a rather unusual setting. The scene represents a section of a coast road, and one picture is taken looking towards the sea, while the other is a view looking inland. The road is driven through a rocky outcrop to form a short tunnel, and I am sure many readers will be familiar with real scenes similar to the one I have depicted.

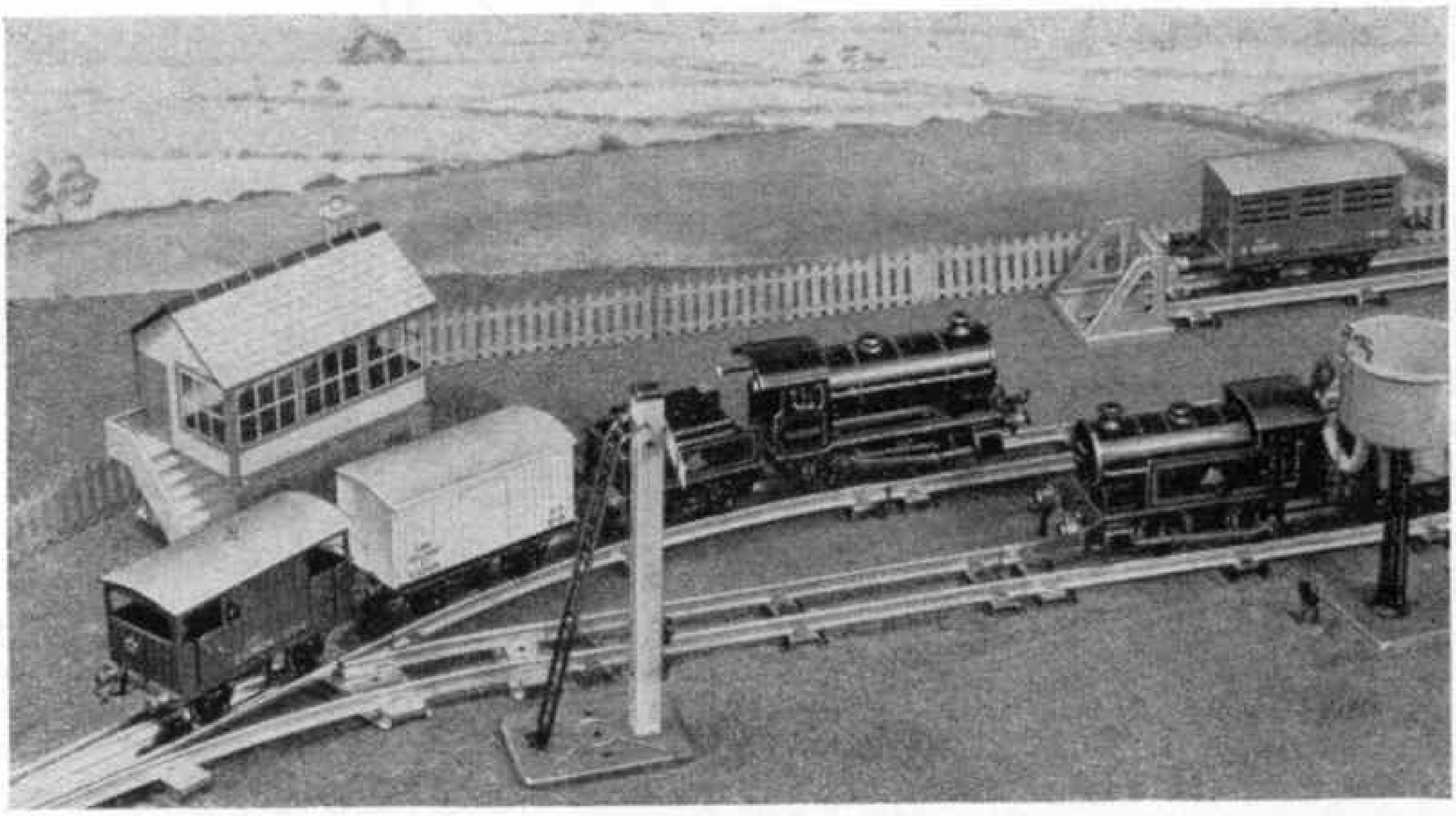
The arrangement is quite easy to set up; the rocks and the tunnel are made by spreading a suitably coloured cloth over blocks or boxes, and the sea wall can be made very easily from strips of cardboard. The "sea" in my scene is a piece of rippled or wavy glass, while sand sprinkled between the glass and the sea wall represents the shore. A tunnel mouth cut from cardboard and a suitable backcloth complete the layout, which is simple to arrange and effective.

A scene of the kind shown in my pictures can well form part of a Dinky Toys layout and in particular it would provide an excellent way of overcoming the difficulty of achieving an effect of distance beyond the corners. In many of the photographs sent to me by readers the layout ends abruptly at the edges of the baseboard, but this can be avoided with a little ingenuity. For instance, in a town scene a main road can be imagined to pass behind the town, running alongside the sea as in my pictures and disappearing in a tunnel. This gives the impression that the main road actually leads somewhere and serves a useful purpose.

Readers who are familiar with the North Wales coast road will probably recognise some similarity between my layout and actual scenes along that route. It is a good plan to model your layout on a real-life scene you know really well, as in this way it is much easier to obtain a realistic effect. Do not try to include a great deal of detail, however, or you will tire of the task before you have completed it.



Another view of the coastal road scene, which forms an effective setting for the new Packard Convertible.



"Shunt with Care"

By "Tommy Dodd"

SHUNT with Care—I expect many of you have seen notices bearing these words attached to railway wagons and have wondered what it was all about. What *is* shunting, anyway?

The term shunting really covers several different operations which are generally similar in the movements they involve, but which may be performed for different purposes. Shunting is usually associated with goods trains and to most of us it means the to and fro moves of the ordinary goods train in station yards or sidings. Wagons may have to be picked up from a wayside station yard, or there may be others to be left there. Most of us are familiar with this simple type of shunting, as we can usually watch the operations at a wayside station and see what is going on.

Above a short but urgent special train passes a siding where the No. 40 Tank Locomotive is "taking water."

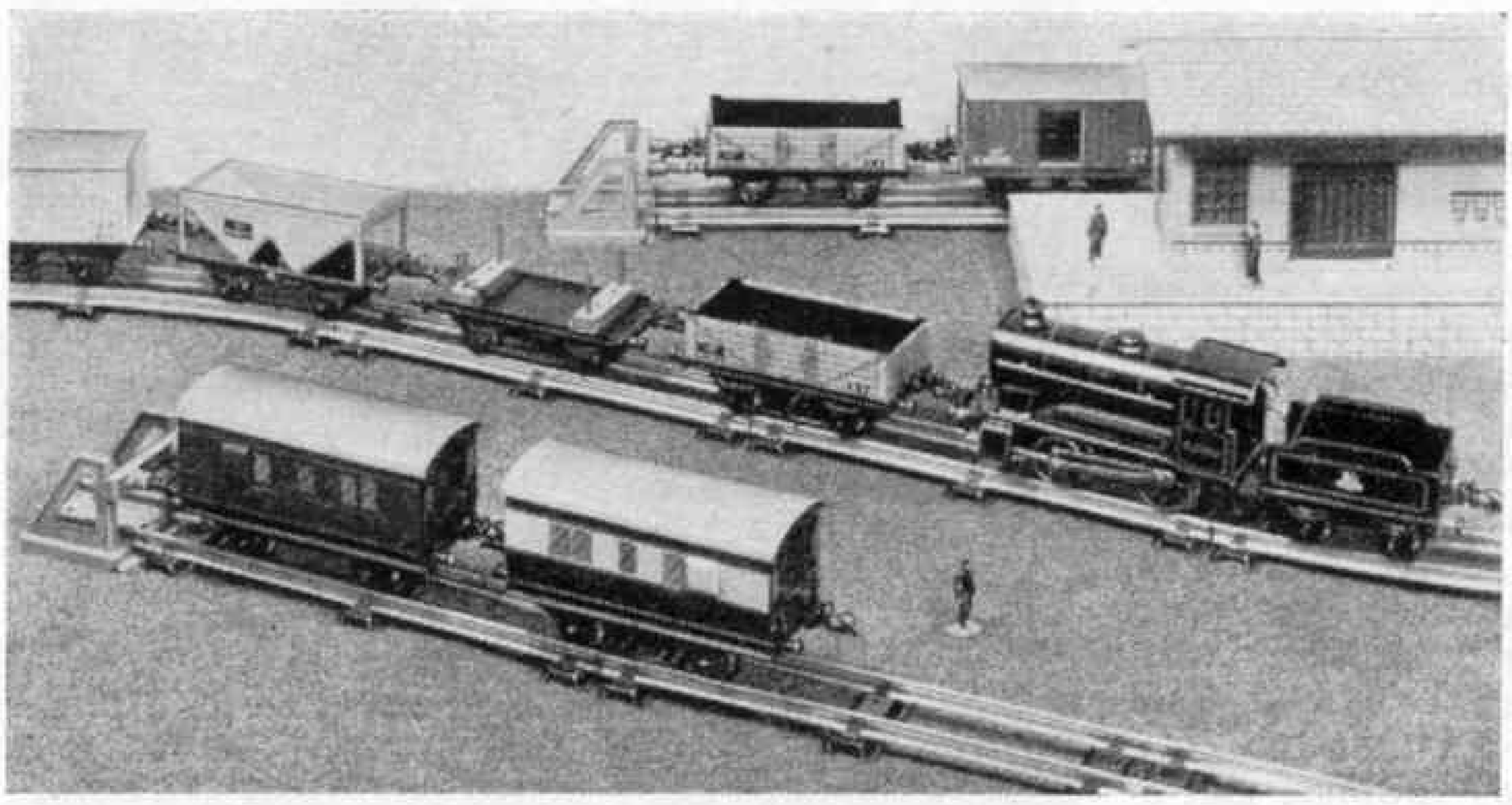
On Hornby railways, even quite small ones, it is possible to shunt, but the layout itself must be suitable and must have one or more sidings. The Points leading to these should lie in a trailing direction to the normal way that the trains travel. The engine must always be able to push the wagons into the siding or to pull them out. If the engine itself heads into the siding it cannot get out again and still leave the wagons there.

The exact position of the sidings will depend a great deal on the layout and the amount of space available. It may not be possible to group our sidings close together, but this need not matter a great deal. Many real yards sprawl somewhat. I have no need to tell you that to make a success of things the track must be properly laid and maintained in good order; otherwise derailments and disappointments can easily occur. The Points particularly must be looked after, so that the switch rails, the parts that move, provide a smooth passage for the wheels, for the Points are constantly in use during shunting.

As the trains themselves, and of course the Points levers, have to be handled so much during shunting operations on a clockwork railway, you should try to avoid the crowding together of accessories that may easily get in the way or at least make it awkward to handle the engine or to uncouple wagons. You cannot omit accessories entirely, but it is a good plan to place them on the off side of the track, away from the operator, if the layout allows this or, alternatively, to space them well out if they have to be placed on the near side of the line.

Naturally, the couplings of our wagons and of the engines too must always be in good order. I have sometimes seen couplings bent upwards or downwards as the result of rough usage, and the owners have then complained that proper coupling

up cannot be carried out! Of course it can't under these conditions! Except for Nos. 20/21 and M1 components the couplings of Hornby rolling stock engage automatically when the vehicles are pushed together. So all couplings should project horizontally on their vehicles so that they



The engine is picking up various wagons from the yard to form a train ready for a main line run.

are all at a similar height, and then the automatic engagement for which they are designed will take place. Uncoupling is not automatic however, but has to be done by hand. All coupling loops must be free, or they will not rise and fall as is necessary in coupling and uncoupling operations.

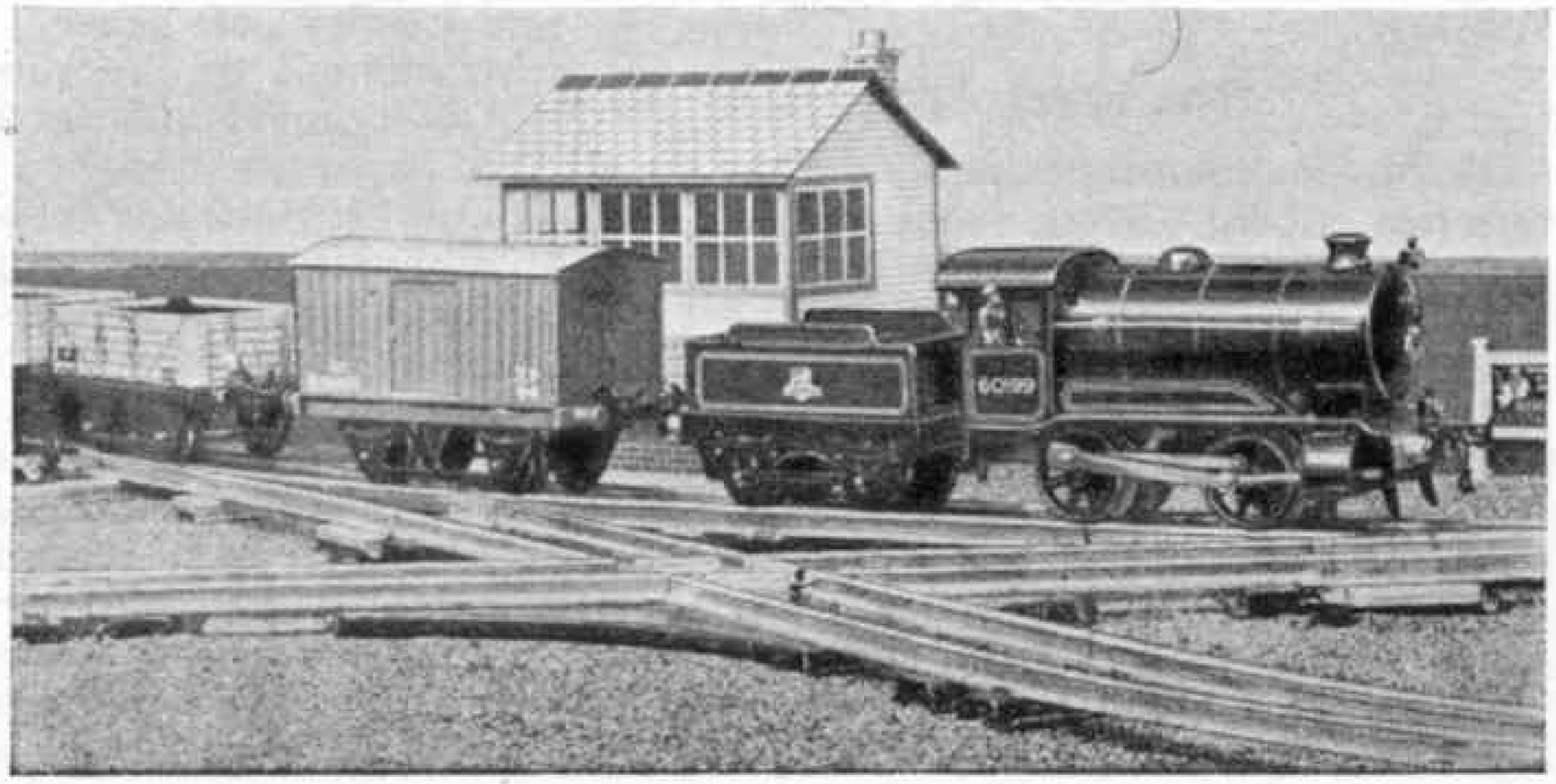
Sometimes one hears a young Hornby railwayman complaining that he is not able to shunt because his engine goes too fast. Usually investigation shows that he has the engine wound right up and it is therefore full of "life" and in such circumstances it cannot be expected to move just one or two wagons at a low speed. It is not at all a bad plan to wind the engine only moderately, or even to give it just a "click" or two of the key for each move to be made. It will make it much more easy to manage.

The frequent reversals necessary and the fact that these have to be made in quite a number of different places make it necessary for the driver to handle his engine almost continuously. Some boys I know allow their engines to move under their own "steam," but they keep their fingers lightly on the cab roof, ready to work the reversing or brake rod when necessary.

If the "driver" is also the "shunter," shunting becomes a two-handed job, particularly where uncoupling has to be carried out. To uncouple, the coupling loops have to be lifted off the hooks. The simplest way of doing this is to use a Meccano Rod or something similar to knock the coupling loops upward. If this is done just as the engine is checked the vehicles will separate quite satisfactorily, but a little practice is needed in order to perfect the operation. The train can be stopped and then the uncoupling can take place, if preferred.

A similar plan should be adopted if we are shunting Coaches or Passenger Brake Vans, either in the course of making up a train in a station or yard, or in placing these vehicles in sidings after a run.

In fact this method is the one to follow if we are to *Shunt with Care*.



A mixed freight train negotiates a complicated junction made up of Hornby Points and Crossings.

Of General Interest

The famous tree of Farnborough. Ministry of Supply photograph.

An Historic Tree

In his article on the Roval Aircraft Establishment at Farnborough in last month's *M.M.*, J. W. R. Taylor mentioned the gnarled skeleton of a tree that stands on the edge of the vast airfield there. He has now sent more information about the tree, which is shown in the illustration on this page. It is indeed of such great historical interest that it has been preserved by a special process that impregnated its dead trunk and branches with plastic. It has been set in a concrete base, surrounded by railings, and a plaque records that "Col. S. F. Cody picketed his aeroplane to this tree and from near this spot on 16th May, 1908, made the first successful officially recorded flight in Great Britain."

The famous Anglo-American pioneer airman actually tethered his great "Cathedral" biplane to this tree with a length of cable attached to a spring balance. When he started up the engine, he was able to measure the "pull" of the propellers by means of the balance and so to prove that they gave enough power to thrust the aircraft off the ground. The aircraft now to be seen around the tree are vastly different from the pioneer machines of Cody's days.

Cody, by the way, was not Buffalo Bill, as has sometimes been thought. These famous characters merely had the same surname.

The Paper Age

During last summer there were the usual outcries about litter, and indeed the countryside seems to have been as well supplied with paper as usual during 1955! Another form of litter that is in some respects even worse than the scattering of paper comes with the conker season. This year conkers were scarce in some parts of the country, but where they did grow it was often only too easy a month or so ago to pick out the site of a horse chestnut tree along a country lane or in a wood, by seeing small branches and leaves strewn on the ground, broken down by throwing stones and wooden stakes into the trees.

Coming back to the subject of paper, I am beginning to think that this might almost be called the paper age, for paper seems to be everywhere, in enormous quantities put to many different uses. I remember a correspondent who visited a battlefield in Finland during the war who remarked on the enormous amount of paper strewn about after the conflict was over!

This suggests that paper is one of the necessities of war. It appears also to be a necessity of peace. I read recently a statement to the effect that in American Government offices 25,000,000,000 pieces of paper are used in a single year; and this number does not take account of technical manuals, pamphlets and periodicals. The total includes about 1,000,000,000 letters and 9,000,000,000 permanent record documents.

There are many other governments in the world besides that of Washington. Although few presumably require paper on the same scale, they must use enormous quantities every year. And to this mass we must add newspapers and periodicals, and paper used for wrappings.

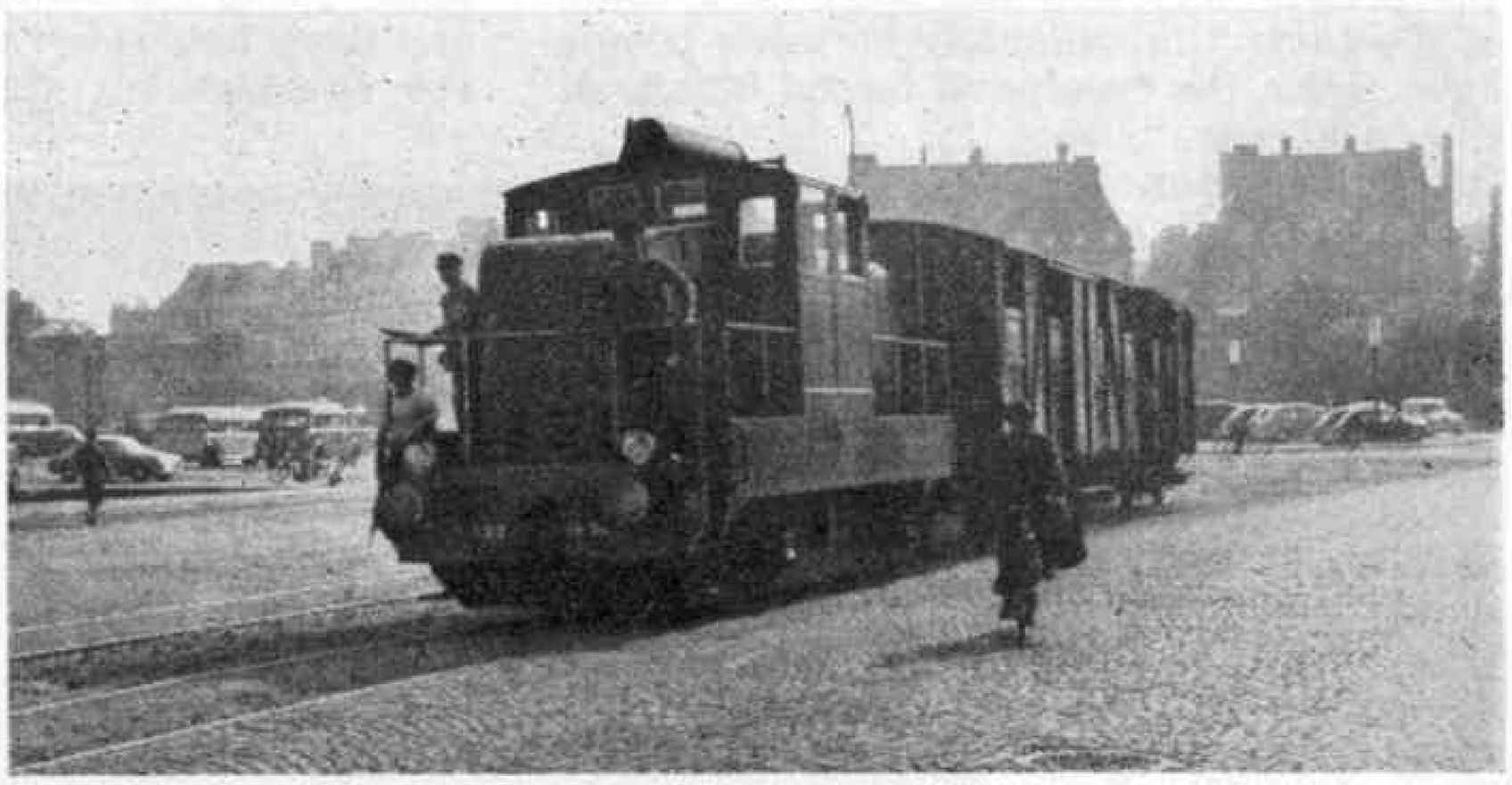
From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or exprience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

Hazards of the Road

As if it were not enough, when travelling on the Continent, to have to cope with all the traffic moving on what to British people is the wrong side of the road, visitors may find themselves dodging trains also.

Here in St. Malo, which is the first town that many visitors see when going to France, I photographed this train. With three of its crew hanging on to the guard rail in front of the engine, it was coming along across the town square, paced by a bicycle.



A train in the town square of St. Malo, in France. Photograph by N. O. Bloomfield, Staines.

The engine is one of the YBD class, 150 horse power, used on the French Railways for shunting work of any kind.

There are of course places in Great Britain where a locomotive and train can be seen making its way along a street. One is at Weymouth, where passenger trains have to run along the roadway in order to reach the quay and to connect with Channel Island vessels. In the United States instances of this kind are more common than here.

N. O. BLOOMFIELD, Staines.

A Signpost giving directions to houses in Selby, Victoria. Photograph by Barry Hunt, Leigh-on-Sea.

An Australian Signpost

The accompanying picture shows the signpost at Selby, Victoria, near the house in which I lived while in Australia.

There are no names to some of the roads and so the boards bear the names of houses. Opposite the signpost are letter boxes fixed to a tree trunk.

I enjoyed my stay in Australia. My brother and I attended Upwey High School, the headmaster of which was Bill Woodfull, the Australian Test captain, who later went to Melbourne High School.

Instead of soccer we played Australian Rules football, 18-a-side, a game that appears to be a mixture of rugby, basketball and soccer.

BARRY HUNT, Leigh-on-Sea.

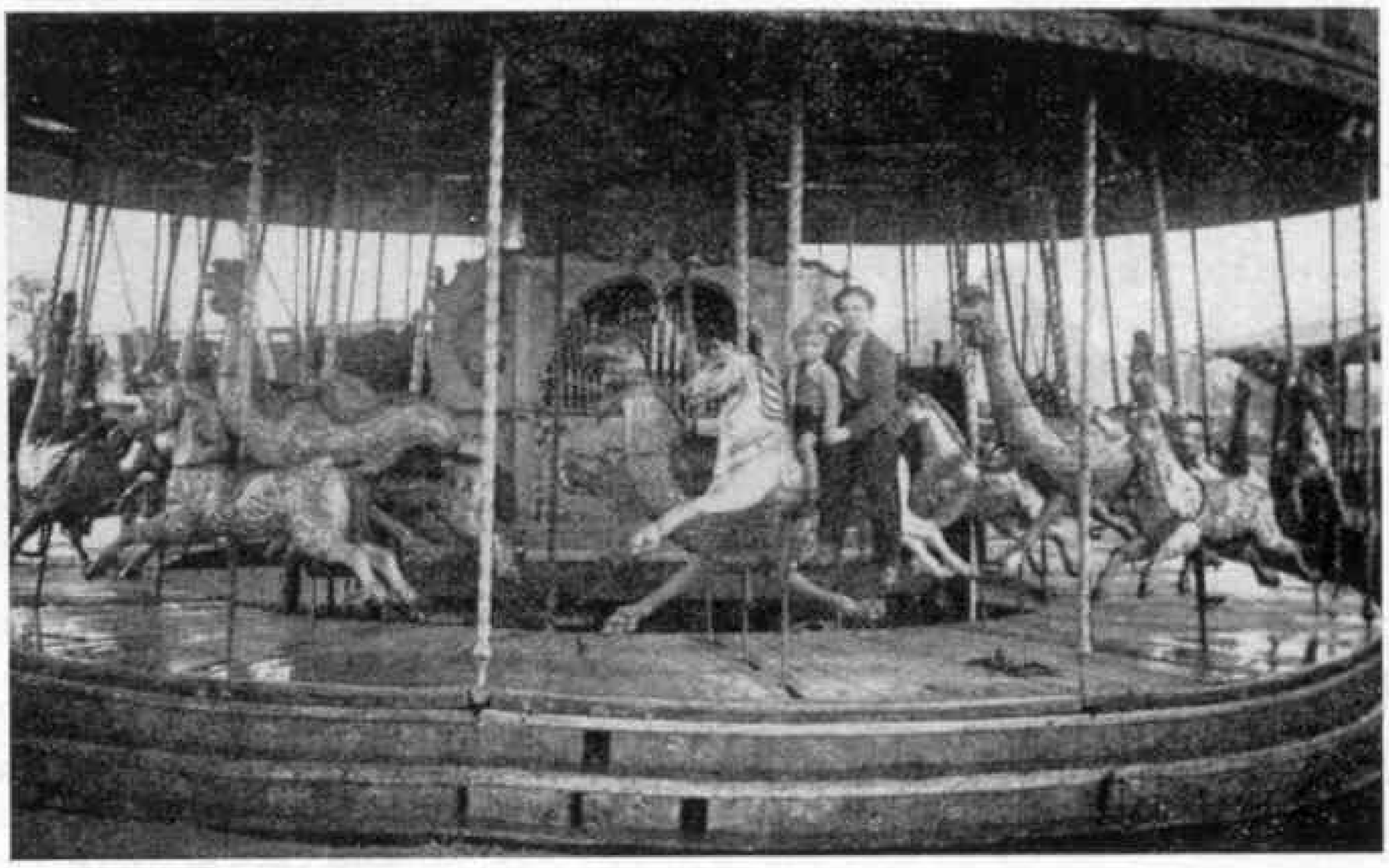
Last of the Steam Roundabouts

By E. F. Instone

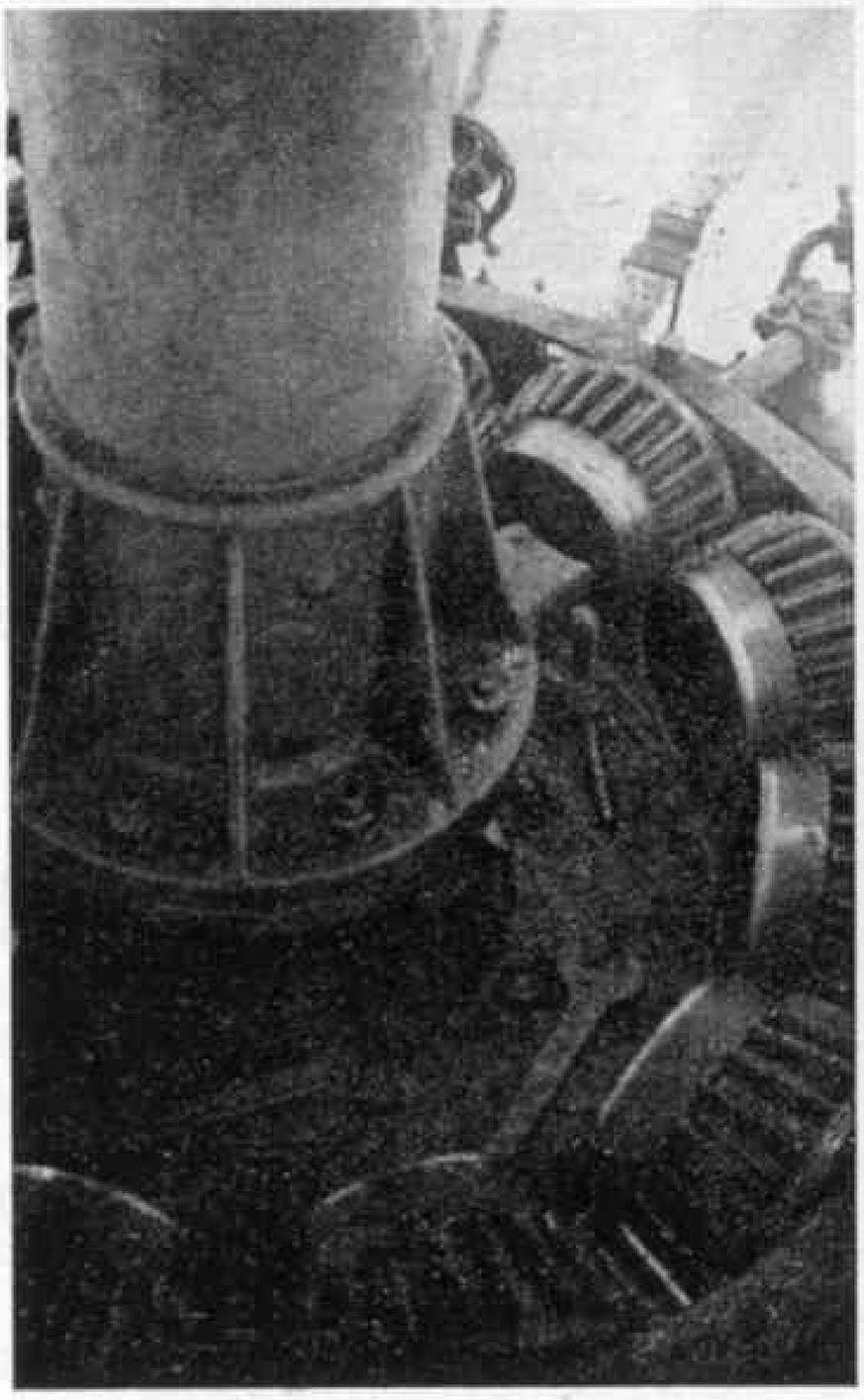
THE old steam roundabout is fast disappearing from the fairgrounds of the present day and will soon be a thing of the past. Unfortunately very few people have taken the trouble to record details of the "Gallopers", as they are sometimes known; so the following notes and photographs may be of some value to model-builders. Many of the roundabouts were built by Savage and Co. Ltd., and those that figure in the illustrations came from the Saint Nicholas Works, King's Lynn.

The heart of the roundabout was a strong four-wheeled wagon that carried the "centre" engine, and the revolving centre or turret. In use this wagon was elevated on gantries, and supported directly under the centre with three or more screw jacks. The centre pole, which also served as a chimney, was hinged so that it could be folded down for convenience when travelling.

The radial arms, or "swifts" as they were sometimes called, fitted into sockets in the top of the turret and were supported by tie-rods from the centre pole. From the swifts hung the platform, and flitch beams between the swifts carried the bearings for the crank shafts from which the animals were suspended.



A veteran steam roundabout. The connecting rod slots beneath the animals are clearly seen.



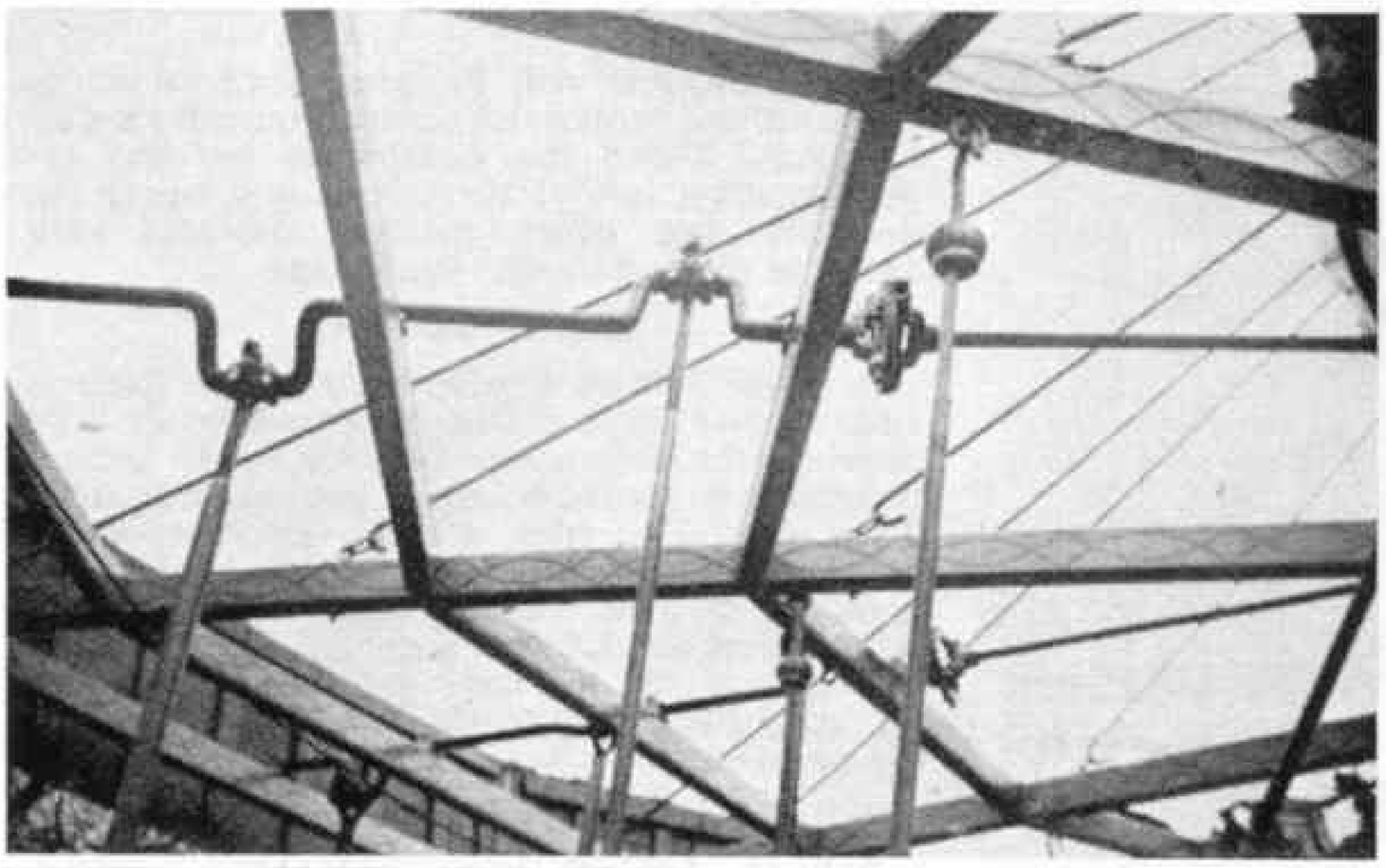
On top of the turret of a steam roundabout, showing how the toothed rollers are fitted.

The turret was driven round by the centre engine through spur and bevel gears, and actually revolved on an ingenious roller bearing, the race and rollers of which formed the bevel gear drive to the crank shafts. This bearing was on the same plane as the swifts. Since the rotating top was subject to deflections according to the load, the drive from the toothed rollers to the crank shafts included two universal joints.

Sometimes the swifts were braced to resist torque, and diagonal tie rods were always fitted from the swifts to the inside edge of the platform. These prevented the top over-riding the platform when the speed of rotation changed. As can be imagined, considerable skill was needed in setting out the suspension and bracing rods so that all could be quickly assembled or dismantled.

Generally there were three rings

of twelve animals each, sometimes all horses, occasionally two rings of horses and one row of cockerels. In addition to the rise and fall motion imparted by the cranks, the animals under the influence of centrifugal



Overhead cranks and crankshafts, with universal joints.

force had an outward movement. To accommodate this the tails of the connecting rods, from which the animals hung, passed through slots in the platform and had a hinged joint at right angles to the crank shaft bearing. The hinge pin was removable so that the connecting rods could be detached from the crank shafts.

Most surviving roundabouts are driven by electric motors and the centre engine is dispensed with. But at least one example seen at Colwyn Bay retained its highly polished engine complete with boiler, completely ornamental of course. The centre engines originally fitted were little different from the portable engines in common use half a century ago, but instead of the normal chimney, a flue was fitted leading from the side of the smoke box, under the lower edge of the revolving turret, to the base of the centre pole that also acted as a chimney.

The degree of decoration applied to the roundabouts appears to have been gauged to suit the taste and pocket of the showman. In some cases the showmen displayed considerable skill in re-decorating, and one example seen in 1944 was receiving skilled attention from an ex-film studio artist, regardless of cost, genuine gold leaf was being lavishly applied.

Generally the revolving turret was glazed with expensive mirrors, and the top centre, which hid the pole above the turret, was formed of twelve fan shaped panels painted with animals, flowers, etc., to a common theme, but each differing in detail. Further scope for decoration was afforded by the panel that enclosed the wheels and gantries of the centre wagon.

Invariably a pipe organ on a separate four wheeled wagon was placed by the side of the centre wagon, the organ being belt driven by the centre engine. The perforated folding cards that "played" the tunes were capable of animating miniature figures, beating drums and triangles. One organ was playing in 1944 the latest song hits from cards cut by an old man, probably one of the last survivors of his craft.

Showmen have a great affection for these old roundabouts, which are often regarded as heirlooms, and they would I suspect run them if they were profitless; it is old age alone which is responsible for their gradual disappearance.

The picturesque cover of the centre pole is made up of panels like this one.

Fairey Ultra Light helicopter, shown for the first time at this year's S.B.A.C. Display at Farnborough. Photograph by courtesy of the Fairey Aviation Company Limited.

Air News

By John W. R. Taylor

Lightweight Helicopter

The Fairey Ultra Light helicopter, first shown at this year's S.B.A.C. Display and illustrated on this page, is intended for observation and liaison duties with the Army. A novel feature is that its crew of two sit side-by-side, facing in opposite directions. So they have a complete all-round field of vision, because their cabin is made almost entirely of Perspex.

This new British lightweight is powered by a Blackburn-built Turboméca Palouste turbo-generator, which supplies compressed air through the two hollow rotor blades to pressure-jet units at the tips. It is claimed that this system offers better fuel economy and a greater speed range than other forms of jet power.

Antarctic Survey

The most important aerial survey operation ever carried out in the Antarctic is being made by Hunting Aerosurveys of London, in conjunction with their associated Canadian company, the Photographic Survey Corp. of Toronto.

Some 50,000 sq. miles of the little-known and remote Graham Land, a dependency of the Falkland Islands, will be photographed from the air by two Canso amphibians, based at the British meteorological station on Deception Island. Stores and ground personnel will be brought in by a ship, specially modified to enable a helicopter to operate from its deck.

The helicopter will fly ground surveyors to the mainland to establish control points for the air mapping. When the weather is too bad for photography, one of the Cansos will search for uranium and other mineral deposits with airborne magnetometer equipment.

Simpler Cockpits

A Flight System developed by Smiths Aircraft Instruments for the Bristol Britannia air liner provides the data normally given by 16 cockpit instruments on only eight special indicators. They give the pilot all the information he requires for safe blind flying and landings at night or in bad weather, and can be linked with a Smiths S.E.P 2 automatic pilot, which will control the air liner automatically during its approach, until within visual distance of the runway.

"Gnew" Gnat

Folland Aircraft have designed a carrier-based version of their Gnat lightweight fighter, and it is being studied by the Royal Canadian Navy as possible equipment for the new carrier, H.M.C.S. *Bonaventure*. Most important changes are the fitting of a new undercarriage to absorb the shocks of deck-landing, an arrester hook and catapult gear.

Because of its small size, the Sea Gnat will not need folding wings, which will make it simpler to maintain and easier to operate than conventional naval fighters.

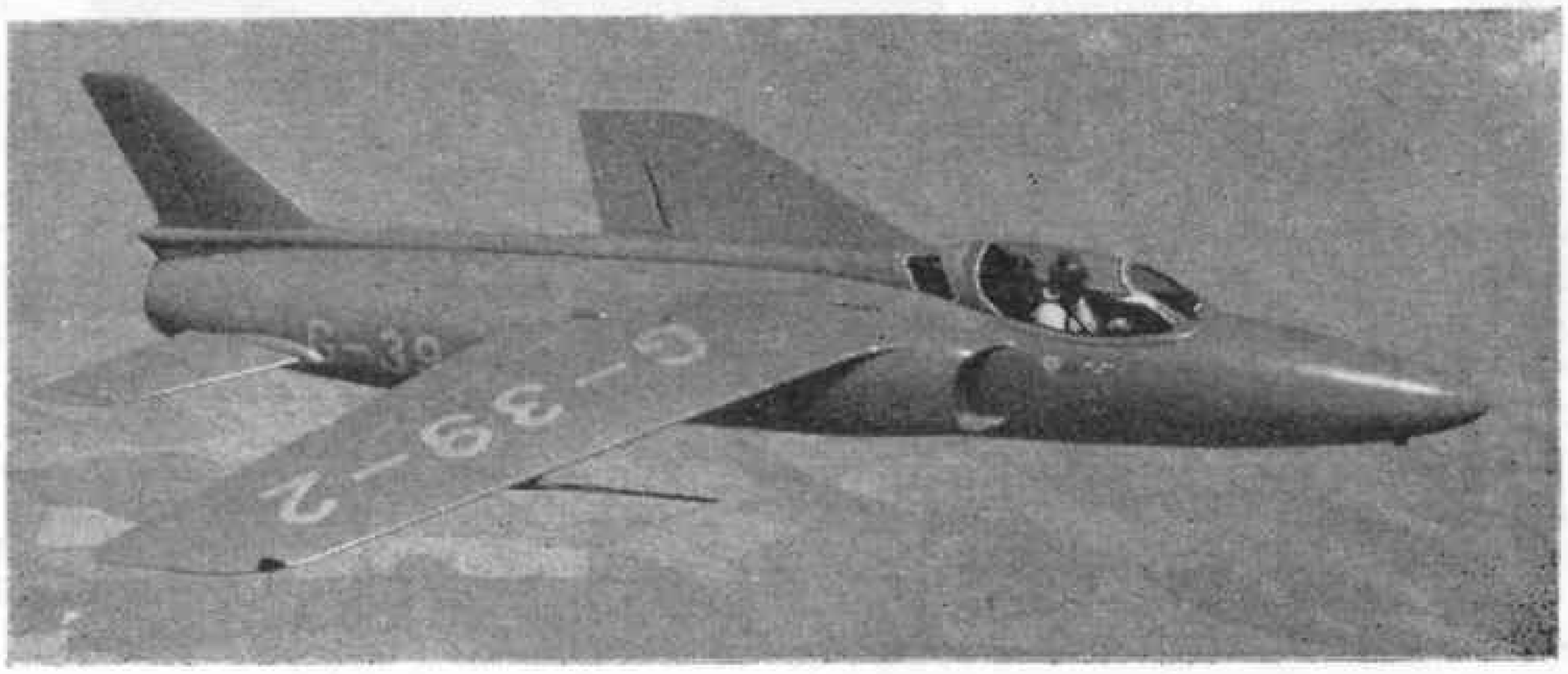
Five Sea Gnats will take up little more room in the below-deck hangar than two of the much larger carrier-borne jet fighters of today.

R.A.A.F. in Malaya

Australia will play a still greater part in the defence of Malaya next year, when a Fighter Wing of two R.A.A.F. squadrons and a Bomber Wing of one R.A.A.F. and one R.A.F. squadron move into the airfield at Butterworth, together with maintenance units and a Fighter Control Unit equipped with the latest types of radar.

The R.A.A.F. bomber squadron will be either No. 2 or No. 6 from Amberley, Queensland, equipped with Australian-built Canberras. It will relieve No. 1 (Lincoln) squadron, which has been in Malaya and Singapore since 1950 and will return to Australia to re-equip with Canberras.

The fighter squadrons will be No. 3 and either No. 75 or No. 77, which are now stationed at Williamtown, N.S.W. They will fly Avon-Sabres.



The Folland Gnat lightweight jet fighter was flown for the first time on 18th July last. A carrier-based version of this interesting machine is referred to on this page. Photograph by courtesy of Folland Aircraft Limited.

Most Powerful Turbojets

An exciting newcomer at Farnborough was the de Havilland Gyron turbojet. Its thrust of 15,000 lb. is the highest yet announced for any jet engine in the world. Tested in a Short Sperrin experimental bomber, it will be fitted in new British supersonic military aircraft with mixed power plants—turbojet and rocket engines—designed for operation at extreme heights.

Second in power only to the Gyron is the Rolls-Royce Conway by-pass engine, which combines a thrust of 13,000 lb. with unrivalled fuel economy. Flown at Farnborough in an Ashton test bed, the Conway will power the Vickers V.1000 four-jet transport.

The rocket-powered Bell X-2 research aircraft. At the controls is Lt.-Col. F. K. Everest, U.S.A.F., who will fly this 2,000 m.p.h. aircraft.

U.S. 2,000 m.p.h. Research Plane.

Latest U.S. research aircraft, illustrated above, is the rocket-powered Bell X-2, which has been designed to fly at more than 2,000 m.p.h. At such speeds, the heat caused by friction of the air rushing past its skin would melt many components of an ordinary aeroplane and suffocate its pilot. But the X-2 is no ordinary plane and was designed to overcome this heat barrier, just as its predecessor the Bell X-1 was the first aircraft to overcome the so-called "sound barrier" in 1947.

Its fuselage and sharply swept wings are built largely of K-monel and stainless steel. both of which have a higher melting point than aluminium. Its windscreen is made of special glass capable of withstanding almost 1,000 deg. F.

The X-2's cabin is heavily insulated, pressurised and so designed that if anything went wrong at high altitudes, the pilot could fire explosive charges that would separate the entire cabin from the rest of the aircraft. A ribbon-type parachute would then carry the cabin to a low altitude, where the pilot could leave it and parachute to the ground.

Like the X-1 and the X-1A, which has flown at 1,650 m.p.h., the new aircraft will be carried to 30,000 ft. under a Superfortress mother-plane to save fuel. At the end of its flight, it will land on a flat skid, which allows additional fuel to be carried in the space normally occupied by the main wheels and retracting gear.

Its Curtiss-Wright rocket engine develops almost as much power as the engines of a modern naval cruiser, and the airframe is packed with scientific instruments to record data upon which the designs of future U.S. military aircraft will be based.

Literally a "Flying Platform," this Hiller research aircraft is claimed to be the simplest powered flying machine ever tested.

Flying Platform

A very different kind of research aircraft is the "Flying Platform," designed and built by Hiller Helicopters under the direction of the U.S. Office of Naval Research. Claimed to be the simplest powered flying machine ever tested, it is almost literally a magic carpet, which the pilot controls simply by leaning in the direction he wants to travel.

It is powered by a small piston engine, which drives two contra-rotating propellers, surrounded by a ring—an arrangement known technically as a ducted fan. They throw down a column of air, just like a helicopter rotor, and this supports the "Flying Platform."

At the moment, the whole idea is in the early experimental stages; but the "Flying Platform" may well herald a new generation of vertical take-off aircraft, as cheap and easy to control as a motor cycle.

Lightplane Record

Averaging more than 38 miles to the gallon of petrol, a Tipsy Belfair lightplane has flown non-stop from Chievres in Belgium to Sidi-Ifni in Spanish Morocco, a distance of about 1,645 miles. This exceeded by some 280 miles the previous international record for aircraft in this category. The Belfair was flown by P. I. R. Andersen, who is test pilot to the makers, Avions Fairey S.A. He was in the air for 17½ hours.

H.M.S. Eagle's Record

Aircraft from the carrier H.M.S. *Eagle* made 201 sorties in a single day, on 22nd August. This is the greatest number ever flown from a British ship. On the same day, the *Eagle* completed her 100,000th mile of steaming since she entered service in 1952.

Among the Model-Builders

By "Spanner"

This cheery smile belongs to T. H. Crisp, who lives in Ipswich and is a keen model-builder.

SINGLE CONTROL LEVER FOR A No. 1 CLOCKWORK MOTOR

The No. 1 reversing Clockwork Motor forms a power unit for Meccano models of many kinds, and its compact design allows it to be built into most suitable models easily and neatly. It is fitted with two control levers, one to start or stop the mechanism as required and the other to reverse the direction of the drive. In many models it is desirable to have completely independent control of these levers, but occasionally it may be more convenient to couple them, so that they can be operated together by a single movement. An arrangement of this kind often simplifies the working of a model, and it can be carried out quite easily as shown in Fig. 1.

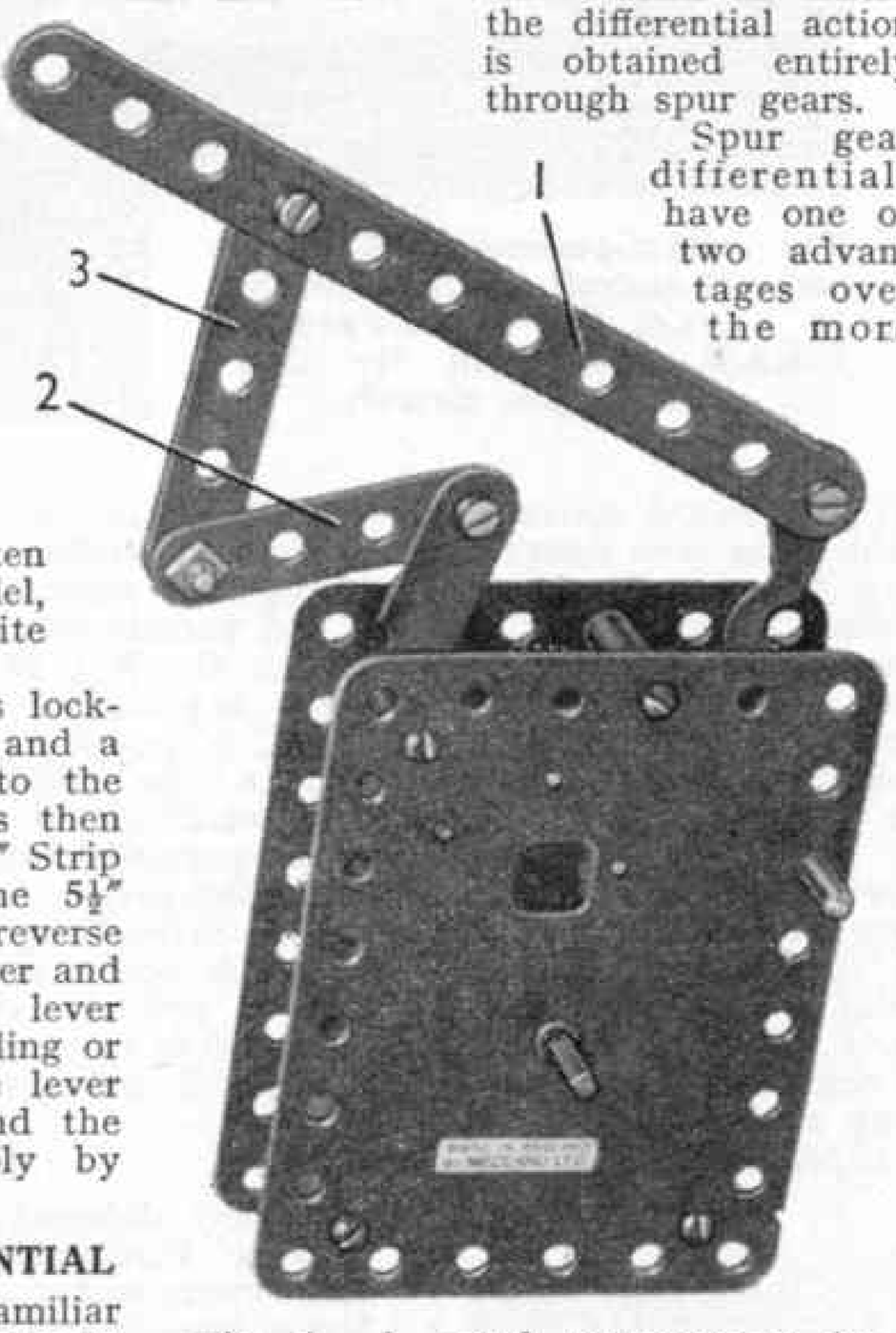


Fig. 1. A novel arrangement for coupling the brake and reversing levers of a No. 1 Clockwork Motor, to simplify the control of a model.

One end of a 5½″ Strip 1 is lock-nutted to the reversing lever, and a 2″ Strip 2 is bolted tightly to the brake lever. A 2½″ Strip 3 is then lock-nutted to the end of the 2″ Strip and is lock-nutted also to the 5½″ Strip as shown. The brake and reverse controls are now coupled together and can be operated by a single lever formed by the Strip 1. By pulling or pushing this Strip the reverse lever can be moved as required, and the brake lever is operated simply by moving the Strip 1 up or down.

A NEW SPUR GEAR DIFFERENTIAL

Most Meccano enthusiasts are familiar with differential mechanisms, the most common use of which is in the driving axles of vehicles to allow the inner and outer wheels to rotate at different speeds on turning a corner. Most of the differential mechanisms described in these pages have made use of Bevel or Contrate Gears, but occasionally I have included details of mechanisms in which the differential action is obtained entirely through spur gears.

Spur gear differentials have one or two advantages over the more usual bevel gear type. For instance, in model form they are rather stronger and generally are easier to assemble and line up correctly. In the past, however, it was rather difficult to arrange suitable bearings for the Rods carrying the gears, and this difficulty tended to make the mechanisms larger than the ordinary bevel gear type. Mr. W. A. Clough, Newport, made a spur gear differential recently in which the bearing problem was overcome in an exceptionally neat way, and an illustration of his mechanism is reproduced as Fig. 2. The arrangement is noteworthy for the excellent use made of two of the new Meccano parts, the Six Hole Bush Wheel and Wheel Disc, and is a good example of the adaptability of these parts.

The driving gear or crown wheel is a 1½″ Contrate 1, in which two 2″ Screwed Rods are fixed tightly by two nuts each. A Six Hole Wheel Disc 2 and a Six Hole Bush Wheel 3 also are fixed by nuts on the Screwed Rods in the positions shown. One of the half shafts that make up the main axle is mounted in the Contrate and the Wheel Disc, and the other is supported in the boss of the Bush Wheel. A ½″ Pinion 4 is fixed on one of the half shafts and a similar Pinion 5 is mounted on the other Rod.

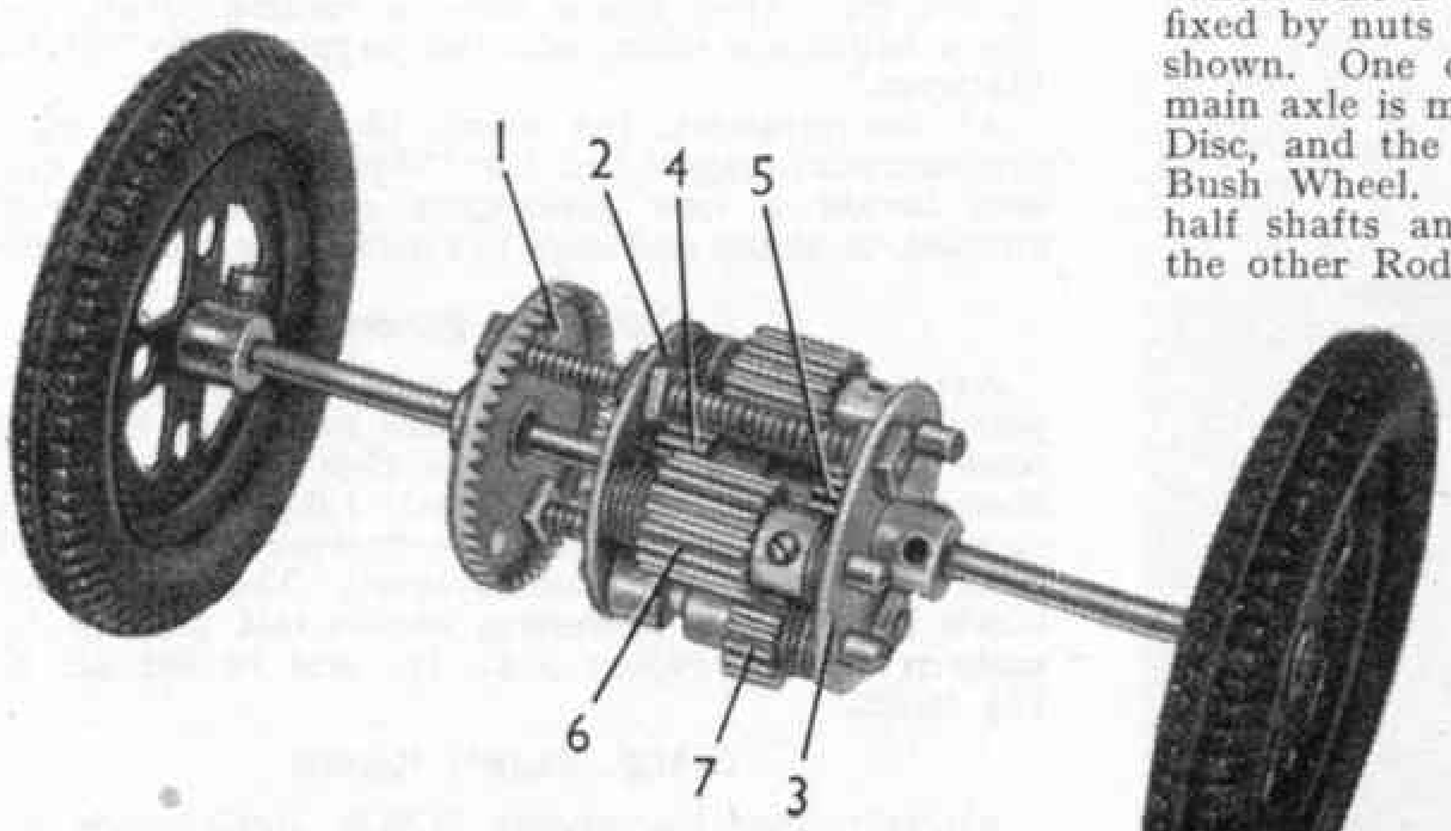


Fig. 2. A spur gear differential mechanism that makes excellent use of two new Meccano parts, the Six Hole Bush Wheel and Wheel Disc.

The intermediate gears are formed by a ½″ diameter, ½″ face Pinion 6 and a ½″ diameter, ½″ face Pinion 7. These are fixed on 1½″ Rods mounted in adjacent holes in the Wheel Disc and the Bush Wheel. Pinion 6 is spaced on its Rod by Washers so that it meshes with the Pinion 4 and the Pinion 7. Pinion 7 is arranged so that it is meshed with the Pinion 5, and the Rod is held in place by a Collar. This arrangement of the intermediate gears is duplicated at the side of the casing opposite to that seen in Fig. 2, so that the mechanism is balanced. The standard Grub Screws in the Pinions and Collars must be replaced by $^{7}/_{64}$″ Grub Screws.

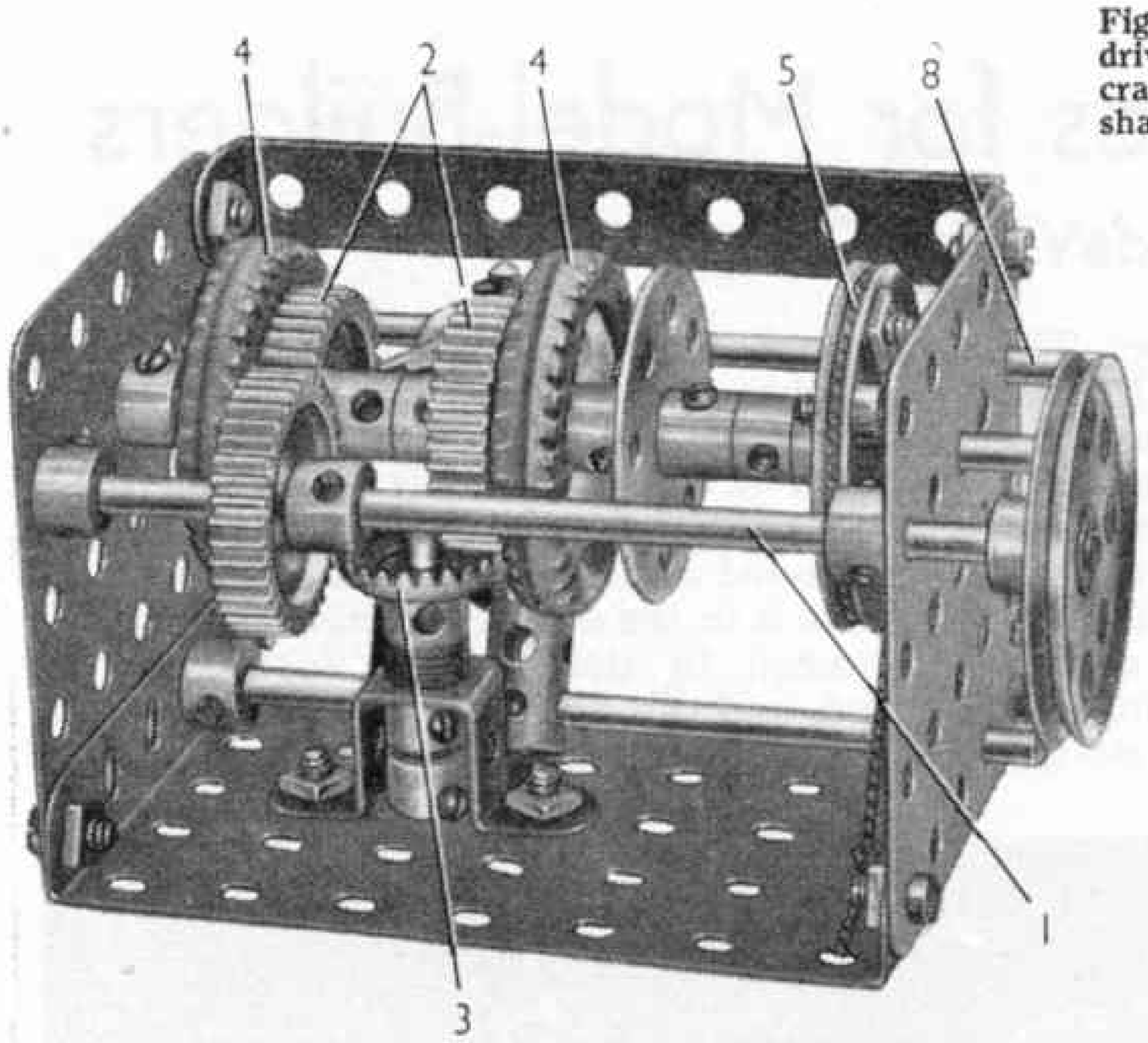


Fig. 3. This mechanism provides a reversible drive suitable for the winding drum of a model crane. A band brake is applied to the drum shaft automatically when the drive is disengaged.

A COMPACT REVERSING AND BRAKE MECHANISM FOR CRANE WINDING DRUMS

Some time ago I received an interesting letter from a keen model-builder who had been unable to assemble a really satisfactory automatic brake mechanism for use in connection with a crane winding drum. It was necessary to provide forward and reverse drives to the drum, and my correspondent wanted to arrange matters so that by moving a single lever, either forward or reverse drive could be engaged while at the same time releasing a contracting band type brake. I suggested a mechanism on the lines of the one shown in Figs. 3 and 4, and as I think other model-builders may find it useful I am including a complete description of the arrangement.

The driving shaft 1 is fitted with a 1" Gear that is in constant mesh with one of two 1" Gears 2. The Gears 2 are free to turn on the shaft that carries the winding drum, and they engage a ¾" Contrate 3 on a vertical Rod suitably mounted in the mechanism housing. The arrangement of the gearing is such that when the driving shaft 1 is turned both the 1" Gears 2 are driven but through the action of the Contrate 3 the Gears turn in opposite directions.

A 1" Pulley fitted with a Motor Tyre 4 is fixed on the Rod next to each of the Gears 2, so that by sliding one of the Gears it can be forced against the corresponding Tyre and thus complete a friction drive to the winding drum shaft. The drum is formed by a Bush Wheel and a 1½" Pulley 5 separated by a Collar. A length of Cord is tied to the base of the housing, is passed round Pulley 5 and is fastened to a Crank 6. This Crank is fixed on a Rod mounted in the housing and held in place by Collars. Two Couplings 7 are fixed on the Rod at a slight angle as shown, and a 2½" Driving Band looped between the Crank 6 and the base tensions the Cord round Pulley 5.

The control Rod 8 is free to slide in the housing and carries a Coupling 9 fitted with a Centre Fork and a 1½" Rod to which a Collar 10 is fixed. The Centre Fork is arranged so that its prongs are located between the Gears 2, and the Collar 10 is positioned between the Couplings 7. When the Rod 8 is moved in either direction the Centre Fork presses one of the Gears against a Tyre to complete either forward or reverse drive, depending on which way Rod 8 is moved. At the same time the Collar 10 presses against one of the Couplings 7, and twists the Rod carrying the Crank 6. The movement of the Crank slackens the Cord round Pulley 5 and thus releases the brake.

MECHANISING YOUR MODELS

I receive many requests for guidance in using the various Meccano Motors and fixing them into models of different types. Mostly of course, these requests come from young and inexperienced model-builders for there is nothing very difficult in using any of the Motors although some models are more suited for one type of Motor than another. Of course the actual method of fixing the Motor in place will depend very largely on the type of model and its size, so it is difficult if not impossible to lay down hard and fast rules. The following general suggestions, however, should give model-builders some idea of how to proceed. To reproduce a model with a maximum degree of realism the Motor, whichever kind is used, should be made to represent, whenever possible, some part of the actual structure. For instance in the case of a small model lorry a No. 1 Clockwork Motor may be mounted flat at the back of the cab and used to represent the floor of the body, while in a Tractor it may be placed under the bonnet and used to represent the engine. The method of driving the model will of course depend very largely on its type, its size and the actual position of the Motor, but for small models built with Outfits up to about Outfit No. 3 a simple arrangement of pulleys and belts will be quite satisfactory In the lightest models a belt drive between pulleys of equal size on the Motor shaft and on the shaft of the model will probably prove suitable but in heavier models it will be best to use a much larger pulley on the shaft of the model.

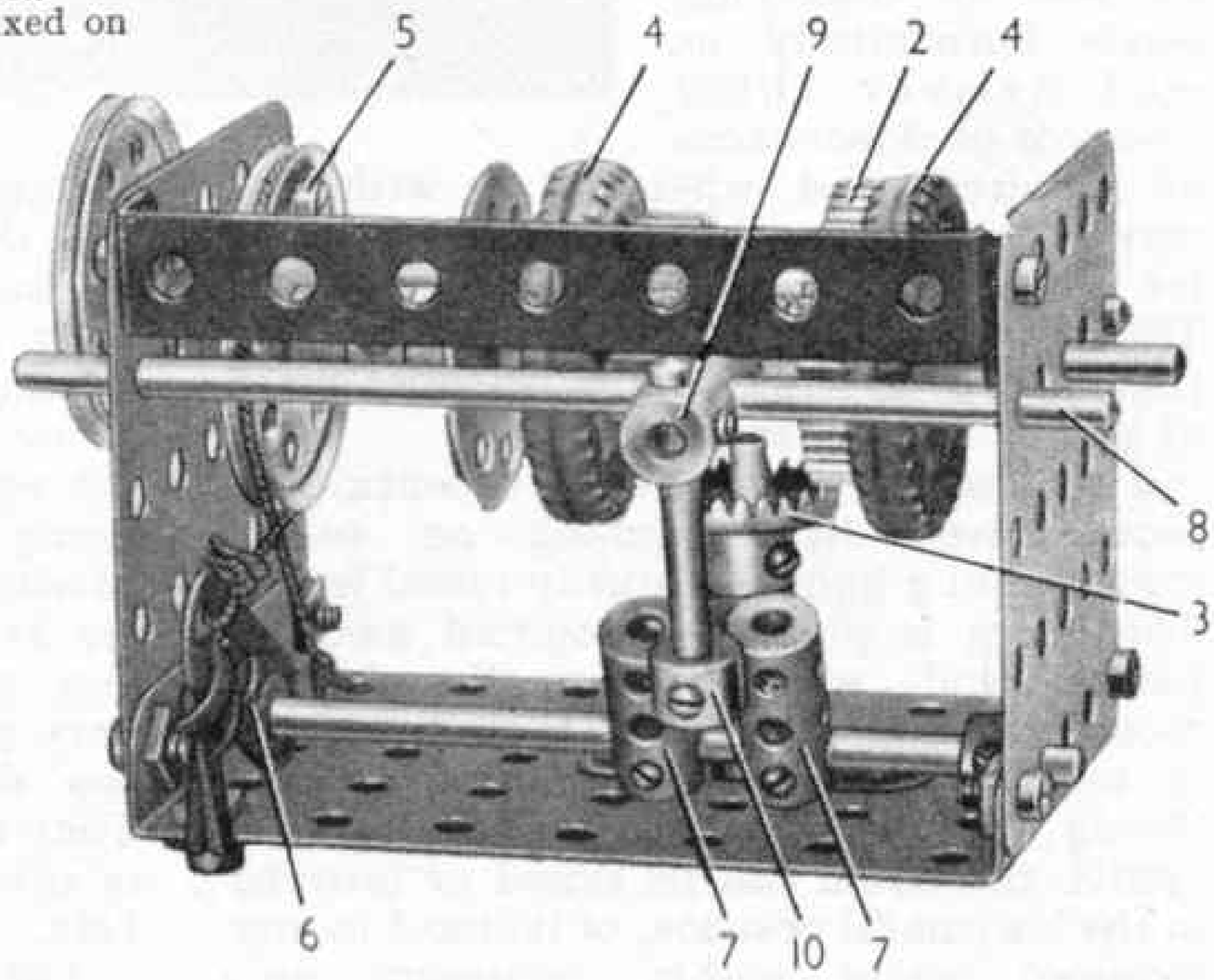


Fig. 4. Another view of the crane winding drum mechanism, showing the lever arrangement that controls the brake automatically.

Big Cash Prizes for Model-Builders

The LoadaVeyor Competition

THE picture on this page shows The LoadaVeyor, which is made by Messrs. J. Collis and Sons Ltd., London, at work. This forms the subject of an important and attractive model-building competition that we are organising in conjunction with Messrs. J. Collis and Sons Ltd. In this Contest, which is open to Meccano model-builders of all ages, we are offering big Cash prizes for the best Meccano models of The LoadaVeyor built by readers of the *M.M.* Details of these Prizes and full particulars for preparing and sending in entries for the Competition are given on the opposite page.

The LoadaVeyor is a light sturdy mobile load conveyor, which can be wheeled quickly into the position where it is required for action by only one person. It can be used for conveying goods horizontally or will deliver them upwards or downwards as required, and when fitted with the correct type of conveyor belt it is suitable for use in a very wide range of industries. The accompanying illustration shows The LoadaVeyor in a warehouse stacking sacks of animal feeding stuffs.

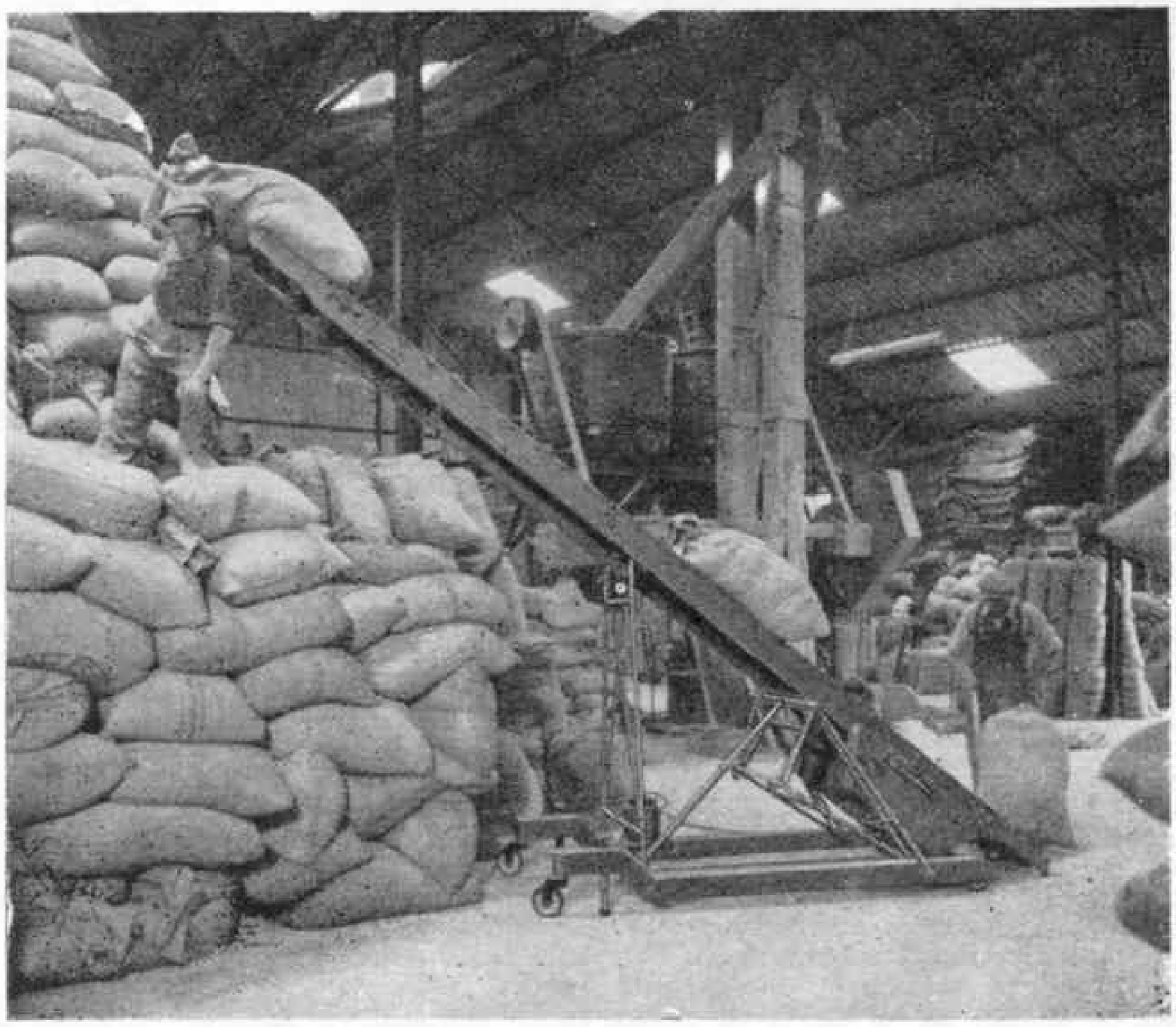


Fig. 1. The LoadaVeyor, with the boom at the maximum angle, in action stacking sacks of animal feeding stuffs.

The LoadaVeyor consists of a continuous motor-driven belt, running on rollers mounted in a light but sturdy metal boom. The boom is pivotally mounted near its heavier end, which carries the driving motor, on a light tubular steel cradle, which in turn is pivoted on a wheeled chassis. Owing to the pivot arrangement of the cradle, the boom can be raised or lowered in the horizontal position, or inclined to any required angle within minimum and maximum limits. Adjustment of the cradle, and therefore the heavy end of the boom, to the required position, is carried out by means of a small Collis Hydraulic Unit fixed to the chassis, the ram of this being connected directly to the cradle. When the cradle is in the desired position the boom is adjusted to the required inclination by hand, and this operation is made quite easy by the provision of powerful counter balance springs fixed to the underside of the boom and the cradle as shown in Fig. 2.

The Collis Hydraulic Unit is controlled from the lever seen at one side of The LoadaVeyor in Fig. 2. A lever operating a screw clamp that works in a channel on the underside of the boom, is provided for fixing the boom in the required position. *Model-builders will not be able to reproduce the hydraulic mechanism in Meccano, and they are free therefore to substitute screw, lever or any other kind of mechanism they can devise that will answer the purpose.* They are also free to use cloth, stout paper or other material for making the conveyor belt.

The motor that drives the belt is mounted

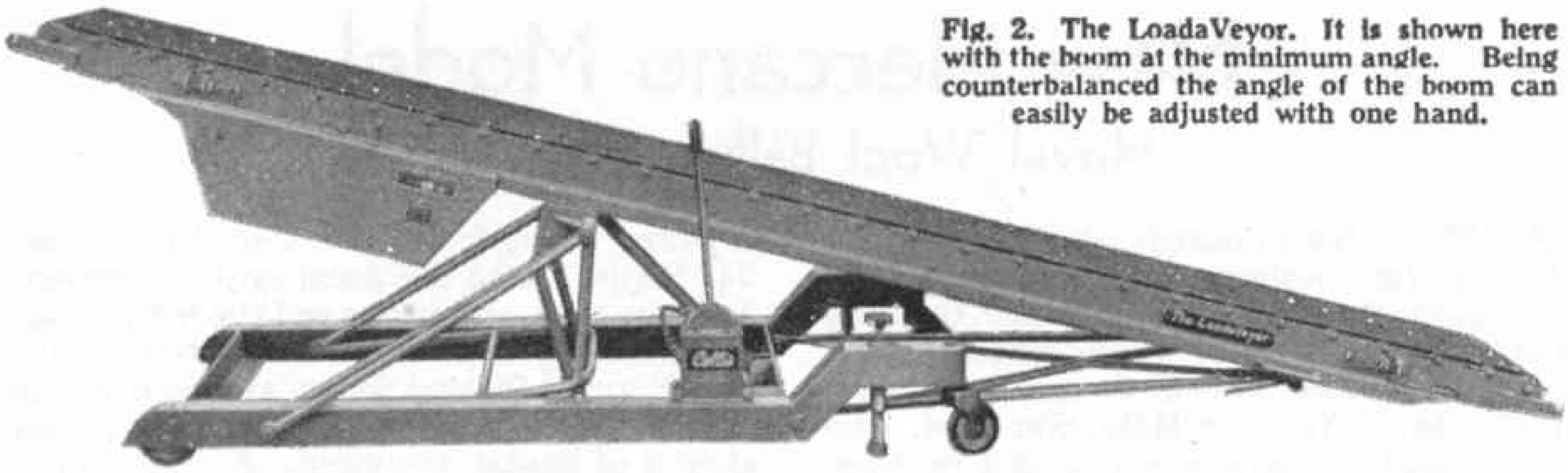


Fig. 2. The LoadaVeyor. It is shown here with the boom at the minimum angle. Being counterbalanced the angle of the boom can easily be adjusted with one hand.

inside a casing at one end of the boom, and is seen in Fig. 3 with the casing removed. The motor transmits its drive by sprockets and chain to the belt driving drum. The latter is mounted so that it can slide up and down to facilitate tensioning of the belt and movement of the drum is effected by a simple screw and lock-nut, which can be seen in this illustration.

The chassis runs on rubber-tyred castors at the front and rubber-tyred ball-bearing wheels at the rear, and is fitted with screw-down sprags for levelling on uneven floors.

Careful study of the accompanying illustrations will reveal the main constructional details of the boom and cradle and will provide intending competitors with all the guidance they need in building their models.

The LoadaVeyor can be supplied with different types of conveyor belts designed to suit the particular goods that have to be handled. A flat fabric belt is suitable for handling cartons, bags and other small items, and if required hard rubber strips can be bolted across the belt at suitable distances apart to prevent goods slipping when the boom is working at a steep angle. For other types of goods endless roller chains, on which are mounted wood or steel slats, can be provided.

It is only necessary that models should resemble The LoadaVeyor as closely as possible in appearance, and be capable of operating in either horizontal or inclined positions.

The Contest is open to readers of all ages in any part of the world and entries will be divided into two Sections as follows: (A) for competitors under 15 years of age on 28th February, 1956. (B) for competitors 15 years of age or over on 28th February, 1956.

The Prizes to be awarded by Messrs. J. Collis and Sons Ltd., and Meccano Ltd., jointly, are as follows: **Section A,** First, Cheque for £10. Second, Cheque for £6. Third, Cheque for £4. Ten Prizes each of £2. **Section B.** First, Cheque for £15. Second, Cheque for £8. Third, Cheque for £5. Ten Prizes each of £3.

The Competition will remain open until 28th February, 1956. Actual models must not be sent. Photographs or drawings will do. Entries must be addressed *The LoadaVeyor Competition, Meccano Ltd., Binns Rd., Liverpool 13.*

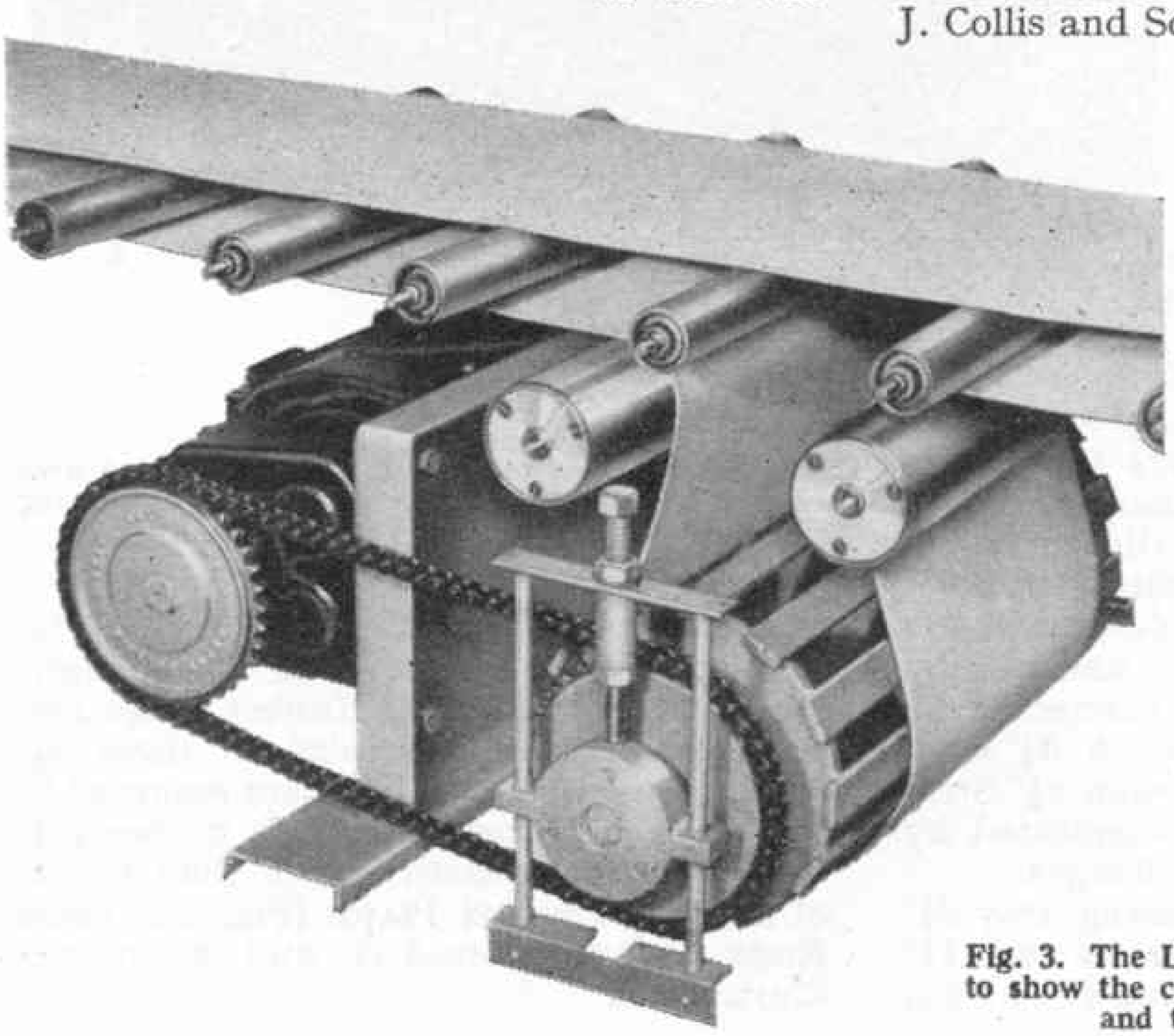


Fig. 3. The LoadaVeyor Driving Unit. In order to show the compact design the belt is cut back and the outer casing removed.

New Meccano Model

Novel Wool Balling Machine

AMONG the hundreds of ingenious and novel subjects represented in the entries for the International Model-Building Competition, 1952-3, were several wool-winding devices. One of these was built by R. Luttmer, Wookey Hole, Somerset, who was one of the prize-winners, and we have taken this as the basis for our new model this month. Our model differs in some respects from that built by Luttmer, but it operates on the same principle.

Most model-builders will be familiar with the skeins in which knitting wool is usually supplied, and which have to be wound into balls before they can be used. Winding the wool by hand is a tedious process, especially when there are several skeins to be dealt with, and the machine described in this article is designed to carry out the job neatly and speedily. The skein of wool is held on a separate device, details of which are also given in this article.

The model illustrated is fitted with a convenient handle for hand operation, but it is quite a simple matter to arrange the mechanism so that it can be driven by an Electric Motor fitted with suitable reduction gearing. There is sufficient space inside the base of the machine to house an E020 or an E20R Electric Motor, whichever is available to the builder, and the Motor can be connected to the main driving shaft of the model by Sprocket Wheels and Chain.

The base of the machine consists of two $12\frac{1}{2}'' \times 2\frac{1}{2}''$ Strip Plates edged by $12\frac{1}{2}''$ Angle Girders and connected at each end by $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates. Two supports 1, each made from two $5\frac{1}{2}''$ Strips placed face-to-face, and two $5\frac{1}{2}''$ Angle Girders 2, are bolted across the top of the base as shown. Two vertical $2\frac{1}{2}''$ Angle Girders are fixed to each of the Girders 2, and the top ends of the $2\frac{1}{2}''$ Girders are connected by two $5\frac{1}{2}''$ and two $2\frac{1}{2}''$ Strips. A $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 3 is bolted to each $5\frac{1}{2}''$ Strip and the Flanged Plates are connected by $2\frac{1}{2}''$ Strips attached to their flanges.

A cage 4 is made by passing two $3\frac{1}{2}''$ Screwed Rods through holes in two $1\frac{1}{2}''$ Pulleys, which are then fixed on the Screwed Rods by nuts. Two face-to-face $7\frac{1}{2}''$ Strips 5 also are fixed on the Screwed Rods by nuts, and at one end the Strips 5 are extended by four Formed Slotted Strips. The Formed Slotted Strips are arranged in pairs and overlapped to form a semi-circular strip 6 of double thickness. At their other ends the Strips 5 are fitted with a counter-balance weight formed by four Flat Trunnions bolted in position.

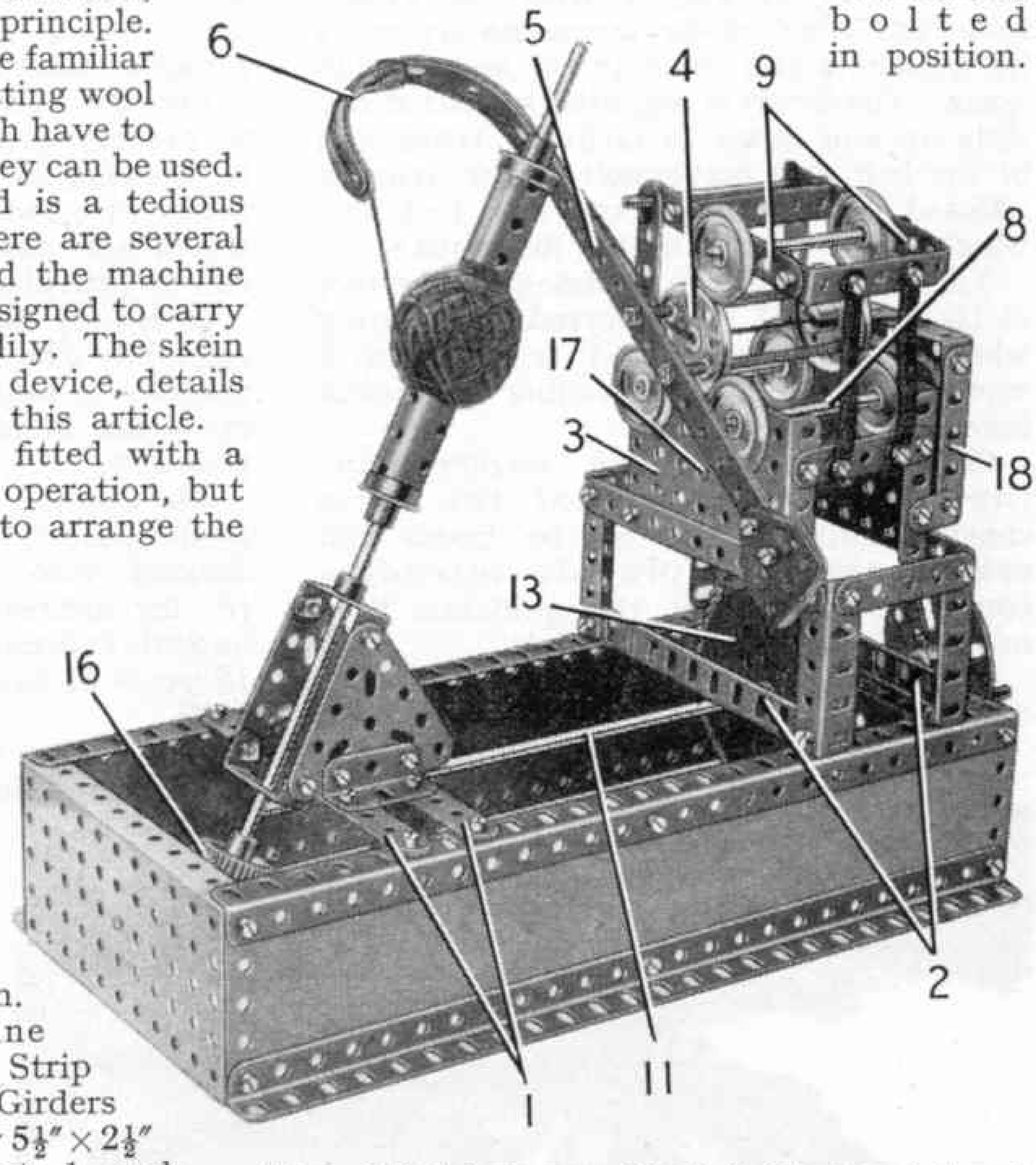


Fig. 1. This ingenious machine is designed to wind wool from a skein into a neat ball. It is based on a prize-winning model made by R. Luttmer, Wookey Hole, Somerset.

The cage 4 is supported and is driven by two sets of three wheels each. These wheels are 1″ Pulleys fitted with Rubber Rings, and they are arranged in pairs on three $3\frac{1}{2}''$ Rods. The two lower Rods are mounted in the Flanged Plates 3 and each carries a 1″ Sprocket Wheel placed outside the rear one of the two Flanged Plates (Fig. 2). These Rods are numbered 7 and 8 in the illustrations.

The third pair of 1″ Pulleys is fixed on a Rod that is held by a Collar in two 3½″ Strips 9. These Strips are connected by two 2½″ × ½″ Double Angle Strips, and at one end they pivot freely on a 3½″ Rod 10. This Rod is held by Spring Clips in two

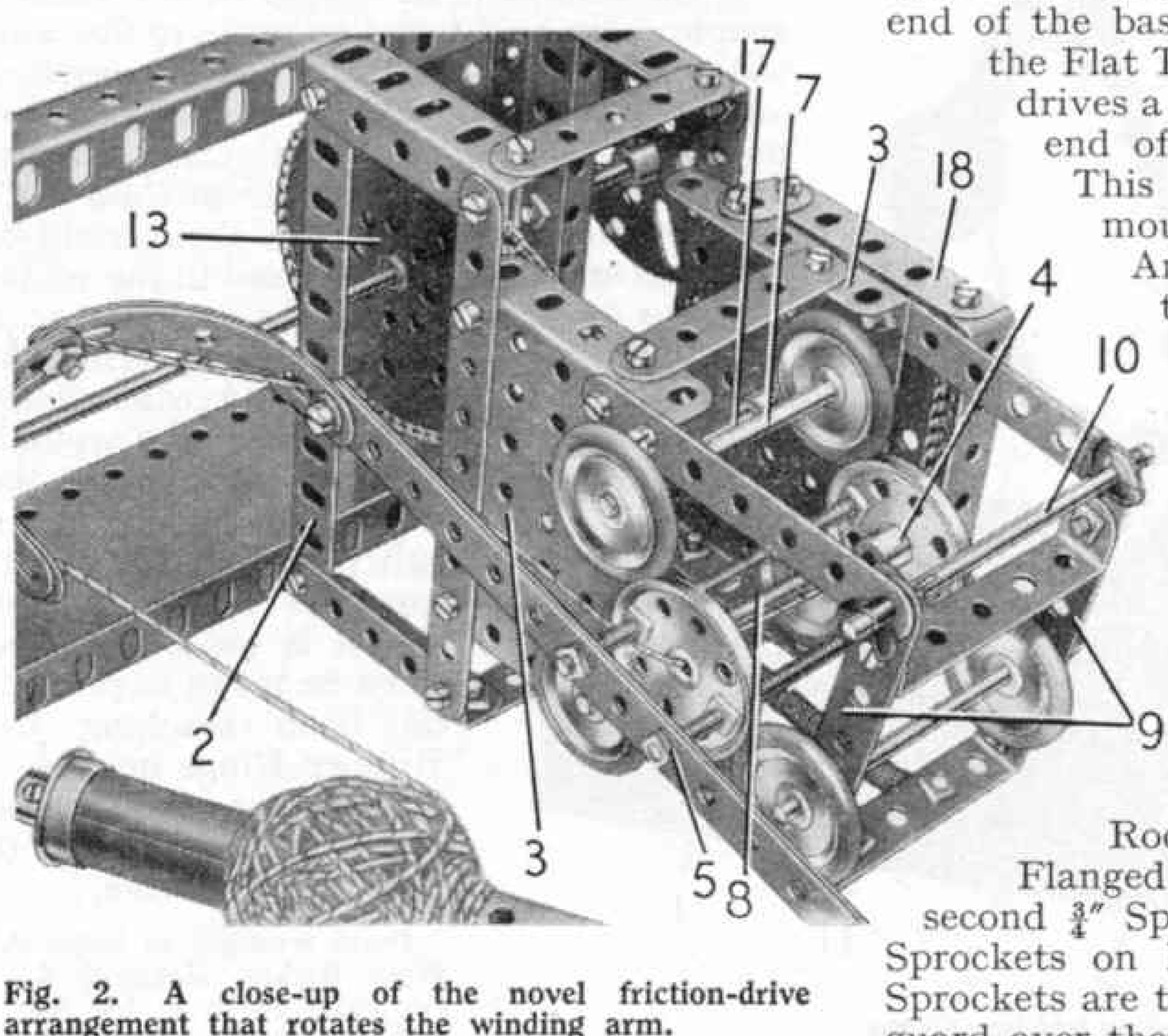


Fig. 2. A close-up of the novel friction-drive arrangement that rotates the winding arm.

3½″ Strips bolted vertically to the Flanged Plates 3. Two Tension Springs are fixed to one of the Double Angle Strips between the strips 9, and to one of the 2½″ Strips that connect the Flanged Plates 3.

The 1″ Pulleys are arranged on their Rods so that when the cage 4 is in position (Fig. 2) the Rubber Rings on the 1″ Pulleys engage the grooves of the 1½″ Pulleys of the cage. This arrangement provides a friction drive to the cage, but leaves the bosses of the 1½″ Pulleys free so that the wool can be fed centrally through the cage. The cage is held in place by the pressure exerted by the Tension Springs.

The main driving shaft is an 11½″ Rod 11 supported in one end of the base and in a Flat Trunnion bolted to a 2½″ Angle Girder that is fixed to one of the supports 1. The Rod carries a handle 12 formed by a Threaded Pin in a Face Plate, a 3″ Sprocket 13 and a $\frac{7}{16}$″ diam. Pinion 14. The Rod is held in place by a Collar, and Pinion 14 engages a 60-tooth Gear fixed on a 4½″ Rod 15 mounted in one end of the base and in the lower hole in the Flat Trunnion. A 1½″ Contrate 16 drives a 1″ Gear located at the lower end of the wool winding spindle. This spindle is an 11½″ Rod mounted in two 1½″ × ½″ Double Angle Strips bolted between two 2½″ Triangular Plates These Plates are attached to 1½″ Angle Girders fixed to the supports 1. The wool is wound on a core formed by three Sleeve Pieces connected by Chimney Adaptors, and fitted at each end with a ¾″ Flanged Wheel.

The Sprocket 13 is connected by Chain to a ¾″ Sprocket on a 3″ Rod 17. Rod 17 is mounted in the Flanged Plates 3 and carries a second ¾″ Sprocket placed below the 1″ Sprockets on Rods 7 and 8. The three Sprockets are then connected by Chain. A guard over these Sprockets is provided by a 3½″ × 2½″ Flanged Plate 18 fitted with two 3½″ × ½″ Double Angle Strips. The guard is attached to one of the Flanged Plates 3 by two Fishplates.

To set up the model the wool is passed through the bosses of the 1½″ Pulleys of the cage 4, and through a hole in the Strips 5.

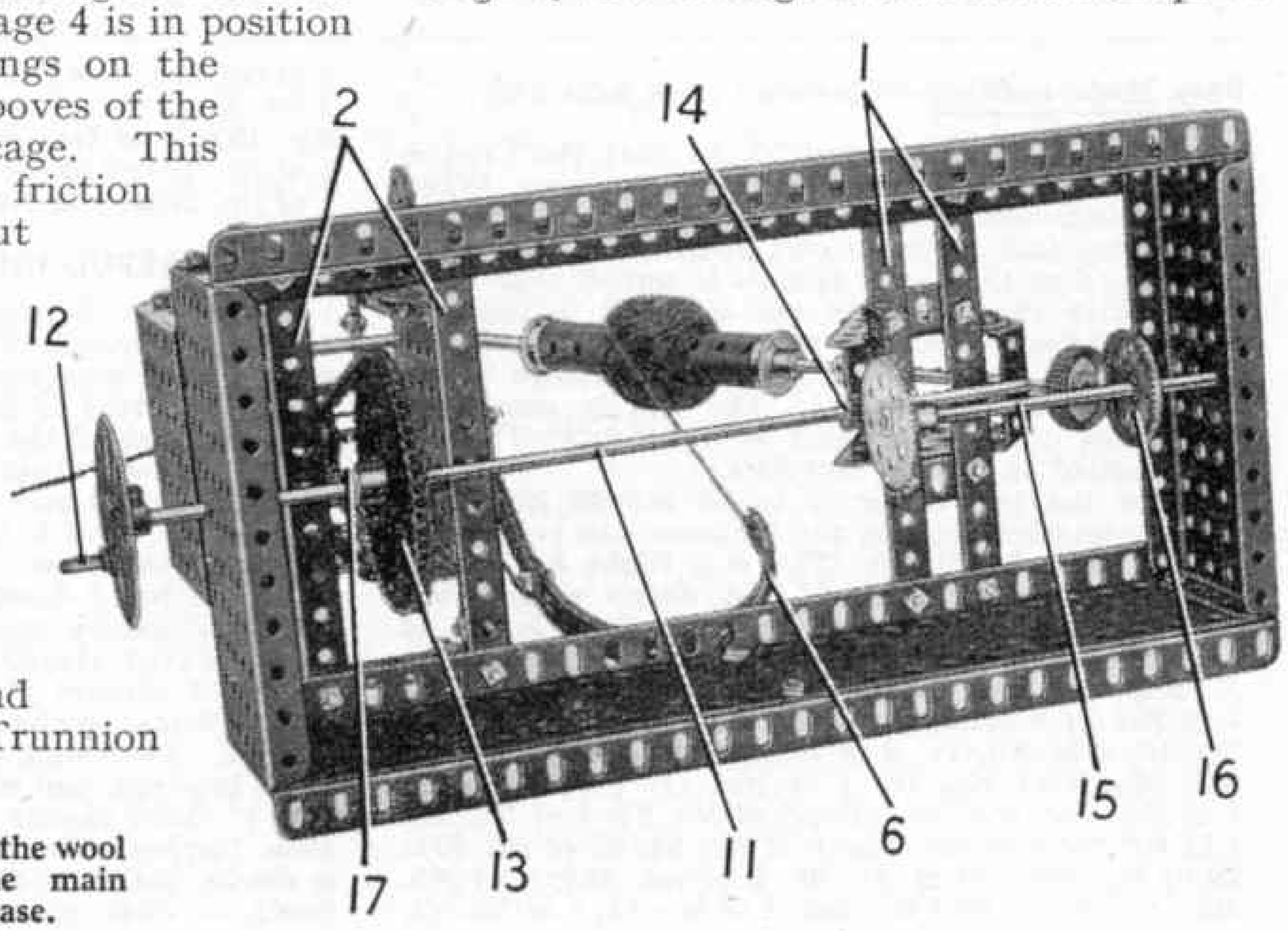


Fig. 3. An underneath view of the wool balling machine showing the main driving shaft housed in the base.

The wool is taken along these Strips and is threaded through holes in the semi-circular strip 6 as shown in Fig. 2. It is then

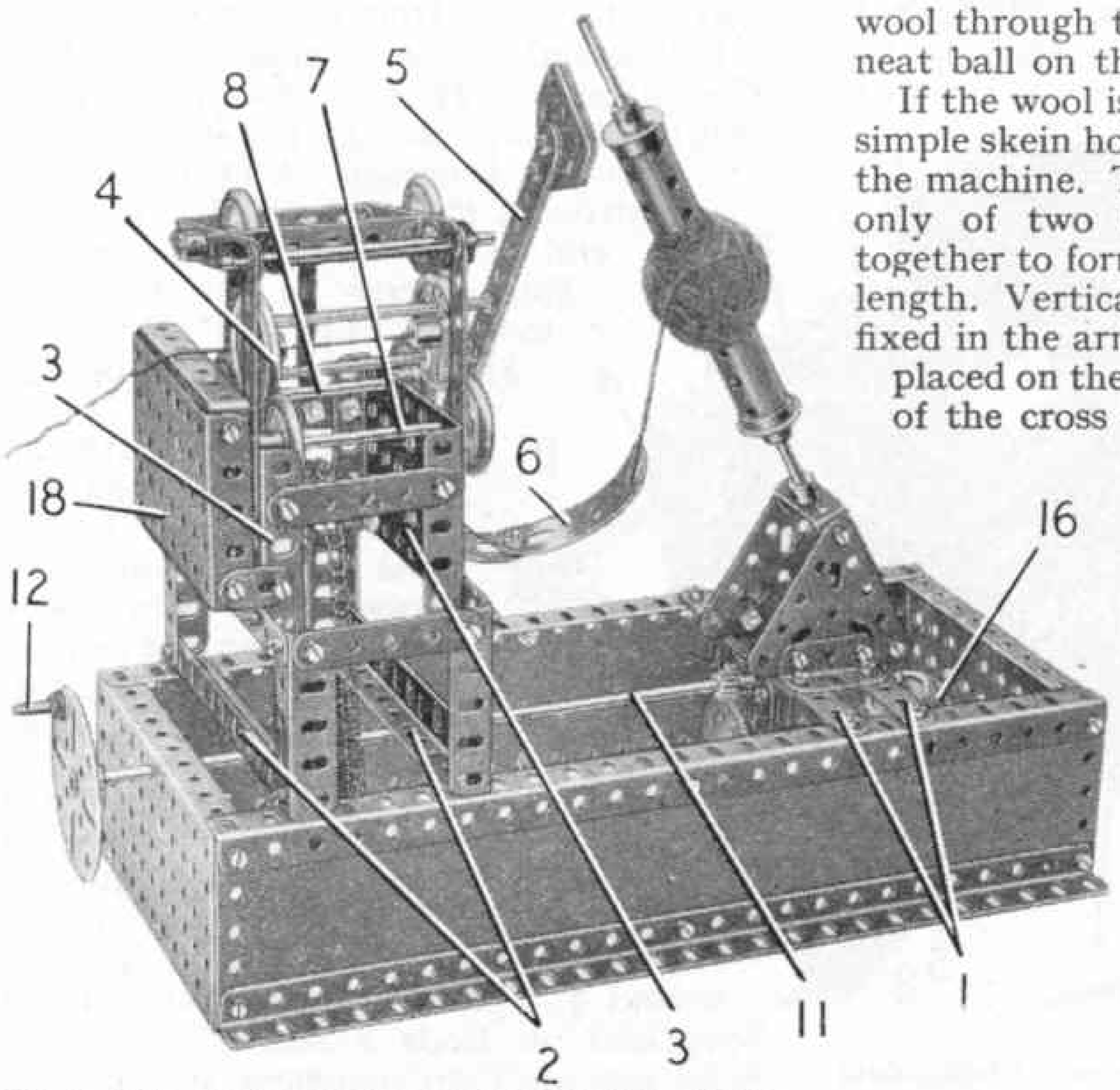


Fig. 4. This view shows the operating handle and the chain drive arrangement that rotates the winding arm.

wrapped three or four times round the centre Sleeve Piece on the winding spindle. The semi-circular strip 6 should be adjusted so that the wool is led from it exactly in line with the centre of the core on which it is to be wound. When the operating handle is turned the cage and the Strips 5 revolve, thus winding the wool round the core. At the same time the core rotates and pulls the wool through the machine, winding it in a neat ball on the spindle.

If the wool is to be wound from a skein a simple skein holder can be made to use with the machine. The holder we used consisted only of two long Angle Girders bolted together to form a cross with arms of equal length. Vertical pins made from Rods were fixed in the arms so that the skein could be placed on them. A Rod fixed to the centre of the cross was pivotally mounted in a suitable base, so that the holder could rotate freely as the wool was wound.

The bearings for the Rods should be lubricated with light machine oil before the model is used, but care must be taken to prevent oil from reaching the Rubber Rings on the 1" Pulleys, as this would reduce the efficiency of the friction drive.

Parts required to build the Wool Balling Machine: 2 of No. 1b; 6 of No. 2; 4 of No. 3; 4 of No. 5; 4 of No. 8; 2 of No. 9; 5 of No. 9d; 2 of No. 9f; 2 of No. 10; 2 of No. 13; 1 of No. 15a; 4 of No. 16; 1 of No. 16b; 2 of No. 20b; 2 of No. 21; 6 of No. 22; 1 of No. 26c; 1 of No. 27d; 1 of No. 28; 1 of No. 31; 4 of No. 35; 88 of No. 37a; 72 of No. 37b; 10 of No. 38; 2 of No. 43; 2 of No. 48; 2 of No. 48a; 2 of No. 48b; 2 of No. 52; 3 of No. 53; 5 of No. 59; 2 of No. 76; 2 of No. 80a; 1 of No. 94; 1 of No. 95b; 2 of No. 96; 2 of No. 96a; 1 of No. 109; 4 of No. 111c; 1 of No. 115; 5 of No. 126a; 6 of No. 155; 3 of No. 163; 2 of No. 164; 2 of No. 197; 4 of No. 215.

Easy Model-building—(*Continued from page 605*)

Cord 17 and turns the rod 15, so that the Cord is wound round the drum 16 and raises the ram. When the Semi-Circular Plate disengages the Tyre on Pulley 13 the ram falls under its own weight, and the action is repeated as the Crank Handle is turned again.

To finish the model fix the cab roof to four 2½" Strips connected at their upper ends by 5½" Strips. For the roof use two 5½"×2½" Flexible Plates bolted to Obtuse Angle Brackets. The cab is completed by adding the floor, which is a 4½"×2½" Flexible Plate bolted to Double Brackets.

When the pile driver is to be moved from one place to another the ram and its frame can be lowered by turning a handle 18. This is a Right Angle Rod and Strip Connector on a 2" Rod, which is supported in Trunnions bolted to the cab roof. Tie a length of Cord to the Rod and to the top of the ram framework.

Parts required to build the Mobile Pile Driver: 4 of No. 1; 8 of No. 2; 2 of No. 3; 9 of No. 5; 3 of No. 10; 2 of No. 11; 8 of No. 12; 4 of No. 12c; 2 of No. 15b; 4 of No. 16; 1 of No. 17; 1 of No. 18b; 1 of No. 19g; 2 of No. 19b; 5 of No. 22; 1 of No. 23; 1 of No. 24; 2 of No. 24a; 6 of No. 35; 87 of No. 37a; 80 of No. 37b; 10 of No. 38; 2 of No. 38d; 1 of No. 40; 1 of No. 44; 5 of No. 48a; 1 of No. 51; 1 of No. 52; 4 of No. 90a; 5 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 142c; 1 of No. 176; 1 of No. 187; 2 of No. 188; 2 of No. 189; 1 of No. 190; 1 of No. 191; 2 of No. 192; 1 of No. 198; 1 of No. 212; 1 of No. 212a; 1 of No. 213; 1 of No. 214; 2 of No. 221.

A USEFUL IDEA FOR MODEL CRANES

Picture No. 4 (page 605) shows a simple way of attaching a length of Cord to a Crank Handle, when a Cord Anchoring Spring is not available. The Crank Handle is fitted to the model in the usual way and then one end of the Cord to be fixed to the Crank Handle is laid along it. Two or more Spring Clips are now pressed over the Cord and the Crank Handle, so that the Cord is held inside the rounded sections of the Spring Clips.

Picture No. 4 illustrates also a simple but effective brake suitable for small model cranes. The 1" Pulley 1 on the Crank Handle has a ⅜" Bolt screwed into its boss, and another ⅜" Bolt 2 is fixed by a nut in one of the Semi-Circular Plates that support the Crank Handle. The Crank Handle is able to slide slightly in its bearings, and when it is pushed to the right the two ⅜" Bolts engage and prevent the Crank Handle from turning. To free the Bolts the Crank Handle is simply pulled to the left and then it can be turned freely to wind or unwind the Cord.

Club and Branch News

WITH THE SECRETARY

A FORTUNATE CAPTURE

I always like to hear of Meccano Clubs and H.R.C. Branches winning friends outside the immediate circle of their members and relatives. Therefore I was delighted to read in a recent report from Mr. V. Malmgreen, the energetic Leader of the Maylands, Western Australia, M.C., of how the Club unexpectedly won a useful ally. I quote Mr. Malmgreen's own words:

"An audience of parents, friends and members were treated to a special screening of Australian films, including two dealing with the work of the Postmaster General's Department. This screening was made possible for us by the P.M.G.'s Department providing the film unit and projectionist for the evening. The projectionist was so pleased with the work that he saw, that he has offered to help the building fund by providing a show during the summer months".

The Maylands M.C., featured in our illustration this month, is one of the oldest Clubs in the Meccano Guild, and will celebrate its 21st birthday next March.

FORTHCOMING EXHIBITIONS

Don't forget the Norbury M.C. Annual Exhibition, announced last month, on Saturday, 19th November next, at St. Stephen's Church Hall, Winterbourne Road, Thornton Heath, Surrey, from 3 p.m. until 8 p.m. There will be many working model railway layouts, and stands of transport interest.

Prices of admission: Adults 6d.; Children 3d.

On the same date the Abbeyfield Road (Sheffield) H.R.C. Branch will hold a model railway Exhibition at Andover Street Church, Sheffield. The Exhibition will be in three parts—a large model railway layout, a display of Meccano models and one of other models, including miniature aircraft.

Prices of admission: Adults, 6d.; Children, 3d.

CLUB NOTES

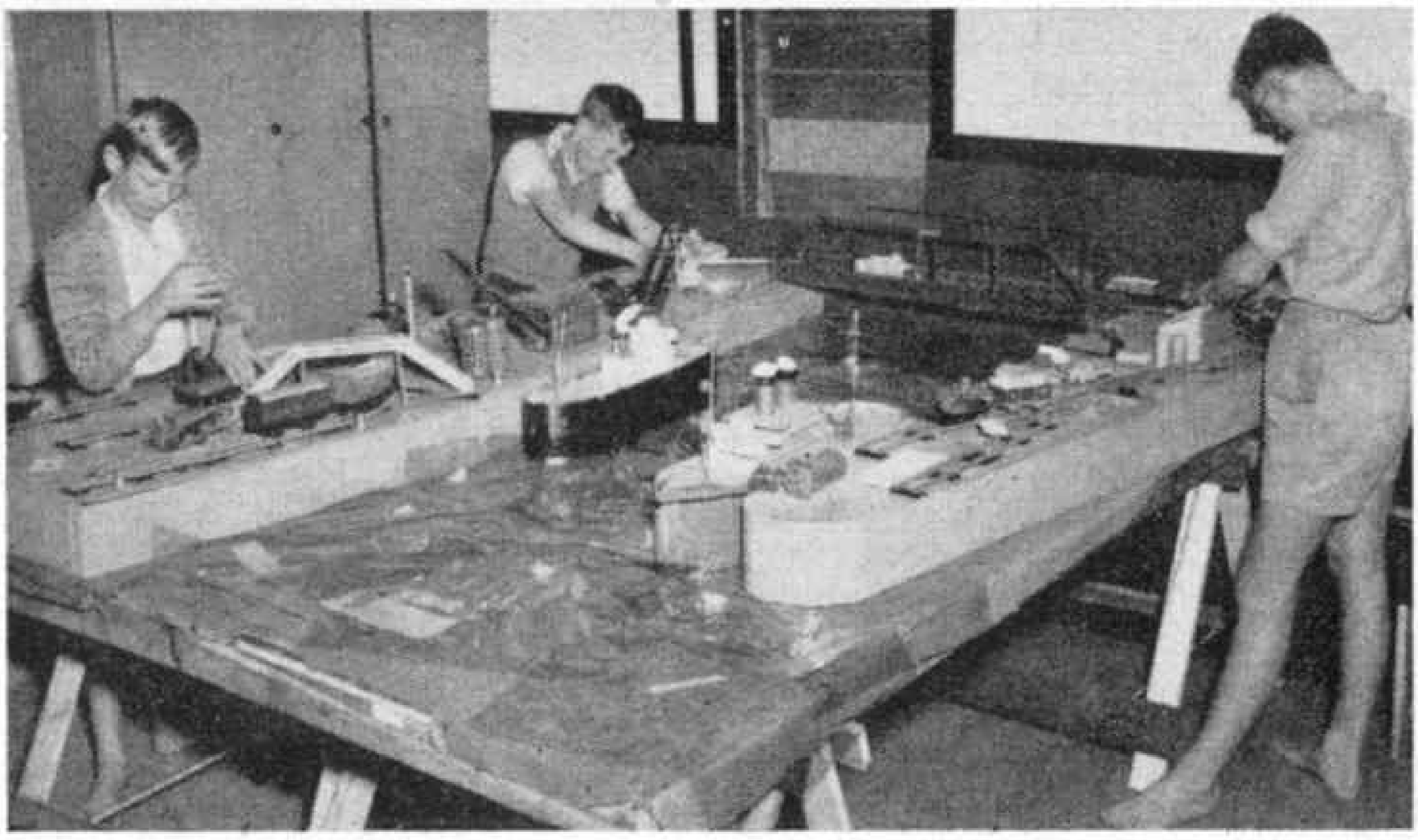
LAUNCESTON M.C.—The interesting programme carried out during the past summer included a talk, with demonstrations, on photographic printing, developing and fixing; outdoor meetings at which members' model aircraft were flown; and a visit to the works of Messrs. Holman Bros. at Redruth and Camborne, where the party were shown all stages in the manufacture of air compressors, from the prototype wooden model to the finished product. The visitors were also shown over the firm's museum, where old mining tools are on display and there is an old working Cornish Beam engine. The annual outing to Teignmouth was a great success. On the way there Dartmoor and Buckfast Abbey were visited, and on the return trip the party halted at Okehampton for the ever-popular fish and chips! Indoor activities are now in full swing again. Club roll: 45. *Secretary:* R. J. Keast, Lytham, Dunheved Road, Launceston, Cornwall.

NORBURY (LONDON) M.C.—Highlights of the recent programme have been a British Transport Commission film show, competition evenings and, in association with the Middlesex Locospotters' Club, visits to B.R. Old Oak Common and Willesden Motive Power Depots and to B R. Clapham Junction Signal School. A Saturday outing to Kenton, L.M.R., for lineside observations has been planned. Other future events will include a lantern lecture and an Exhibition. *Secretary:* L. Woolf, 52 Portland Road, South Norwood, London S E.25.

MILE END (PORTSMOUTH) M.C.—Meetings are being held on alternate Wednesday evenings as from 7th September last. The present Session began in fine style, with the staging of a very good opening Exhibition, in which the associated H.R.C. Branch co-operated. Cards asking for new members were placed at suitable points round the exhibition hall, and resulted in several visitors expressing a desire to join the Club. Club roll: 30 *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road. Portsmouth.

AUSTRALIA

MAYLANDS M.C.—A most interesting visit by twenty members to the factory of the Australian Glass Manufacturers revived a very popular feature of the Club programme several years ago, and more visits to places of interest are now being planned. Parents of members have been busy preparing for the Club's annual Fete, and several members have been fully occupied producing more of the small wooden railway engines which were so popular two years ago. Meccano model-building activities are being well maintained, and there is a regular flow of excellent completed models. Club roll: 46. *Secretary:* Mr. V. Malmgreen, 16 Kennedy Street, Maylands, Western Australia.



Members of the Maylands (Western Australia) M.C. at work in the Club room on the construction of a model harbour for the Club's annual Exhibition. Photograph by courtesy of West Australian Newspapers Ltd.

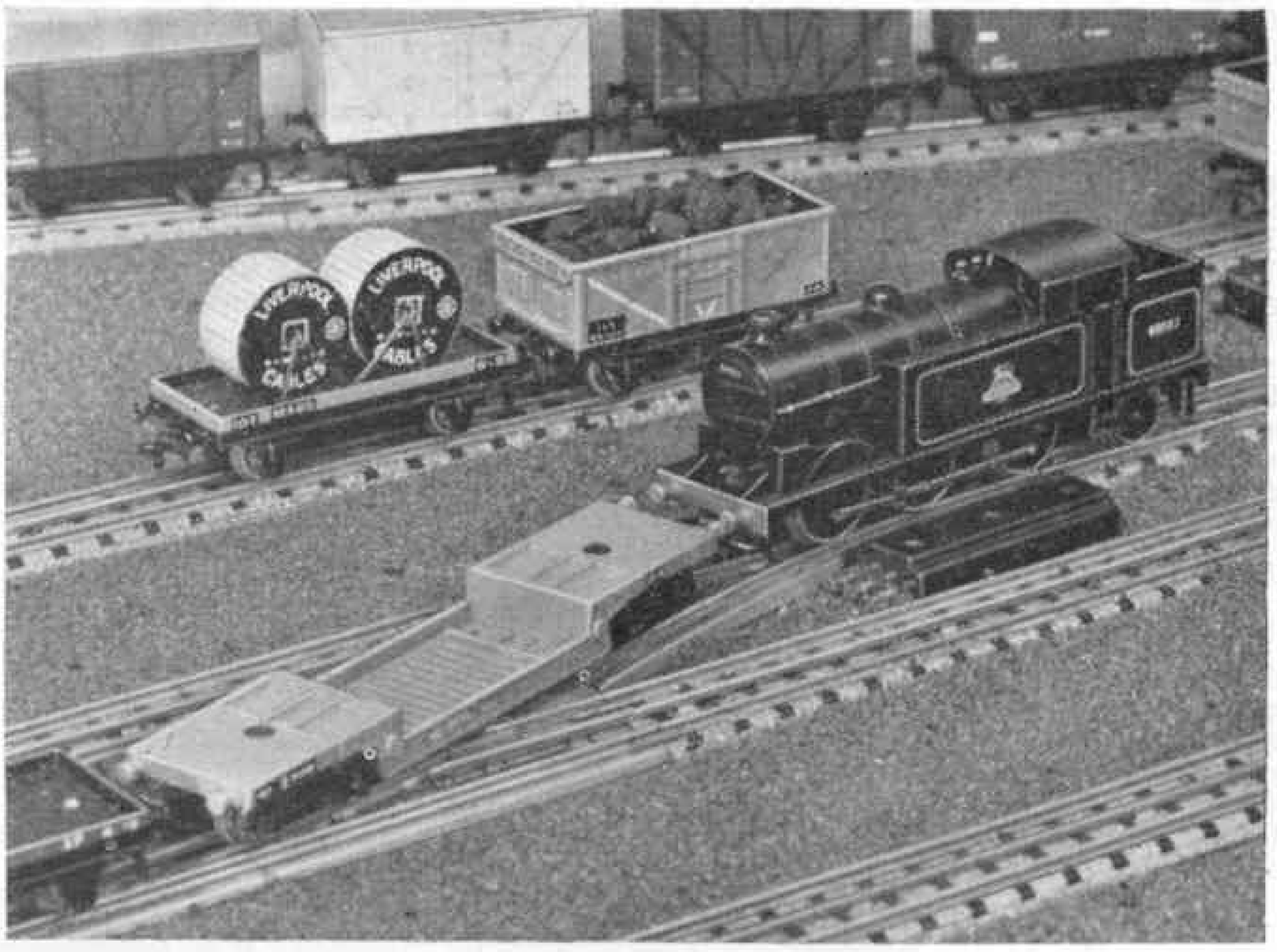
HORNBY RAILWAY COMPANY

A New Wagon for Hornby-Dublo Railways

By the Secretary

BEFORE you read this I am sure that many of you will have been quite excited by the announcement inside the back cover of this issue of the appearance of a new piece of rolling stock in the Hornby-Dublo system. I can well imagine that all Hornby-Dublo owners will be pleased to read something about the design, construction and use of this, the 40-ton Bogie Well Wagon, and I am glad to be able to give you two views of this realistic and effective vehicle in use on a layout. Many requests have been received for a vehicle of this type, so I am certain that the new Wagon will be very popular.

As the name implies, a well wagon is one having its middle part depressed in order to form a well between the wheels or bogies that support the ends of it. Well wagons therefore are specially adapted for the conveyance of heavy or bulky loads, while still keeping them within the limits of the loading gauge. Big boilers, ship's propellers and all kinds of large or heavy machinery or machine parts are carried on real well wagons.



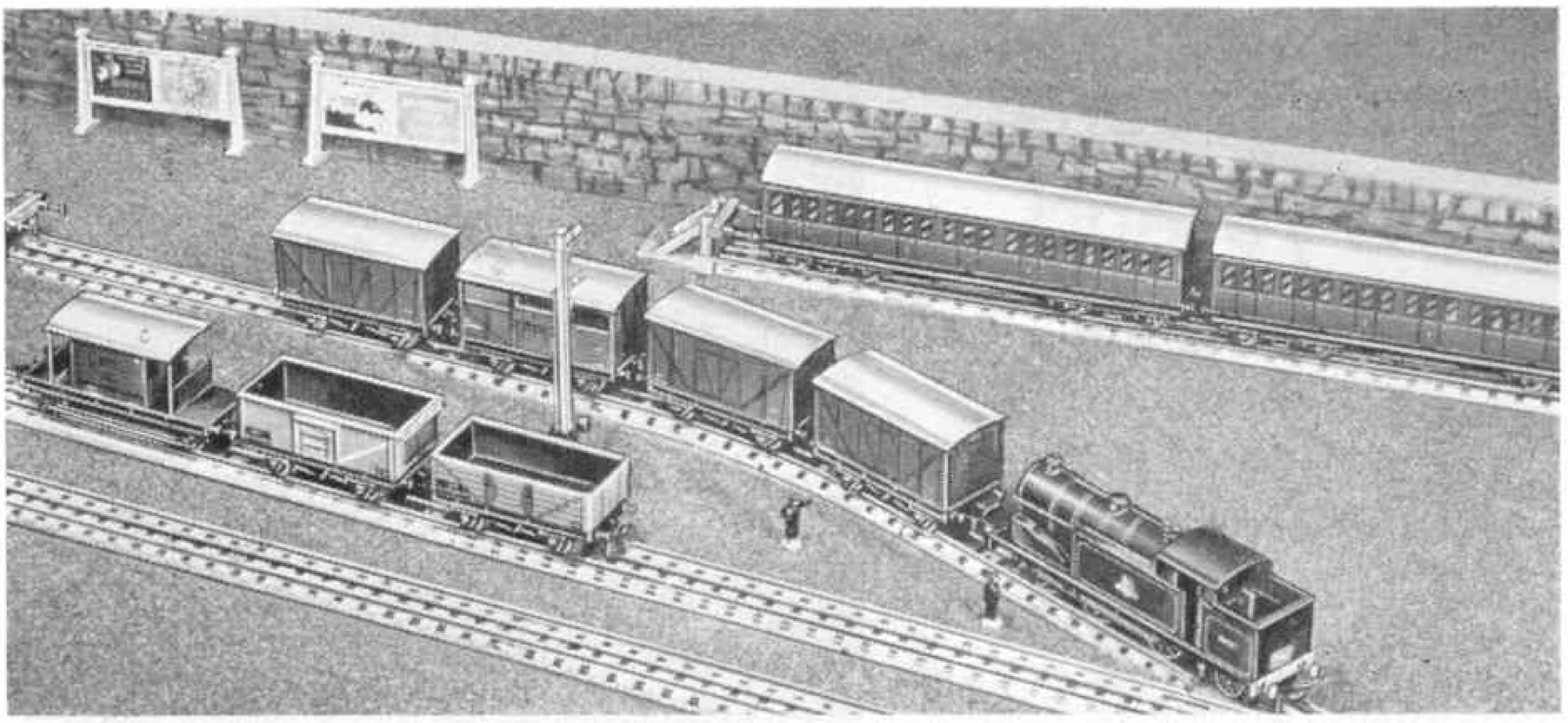
Here is the new Bogie Well Wagon mentioned in this article. The well reproduced detail of the model is clearly shown.

I need not tell you that the Hornby-Dublo Bogie Well Wagon is an accurate representation of the modern 40-ton vehicles of this kind in service on British Railways. Needless to say, the body of the Wagon is a one piece die-casting of great strength and with a very pleasing amount of detail. The well part of the Wagon really *is* a well, and as in the real thing there is a series of cross-members for strengthening the well to support the loads that actually rest in it. The length of "upper deck" at each end is not plain, but is recessed in order to represent the girder construction of real wagons of this type. The Hornby-Dublo Well Wagon therefore looks particularly good when seen from above, the usual viewpoint on small scale miniature railways.

Broadside detail is very good too. The girders forming the sides of the well are clearly reproduced, with their characteristic channel section, while the heavy-looking gusset plates connecting them to the side members of each of the raised ends are seen in relief and carry representations of the rivet heads that we expect with this form of construction. Very neat, too, are the cast representations of the four hand brake wheels projecting from this part of the vehicle, one near each corner of the well sides.

The Hornby-Dublo Well Wagon is of course finished in B.R. standard grey, with tonnage, running number and tare weights in white on the usual black "patches." The bogie frames are in black. The code name *Weltrol M V* appears on the side girders of the well.

I do not think any of you will find it difficult to arrange appropriate loads for

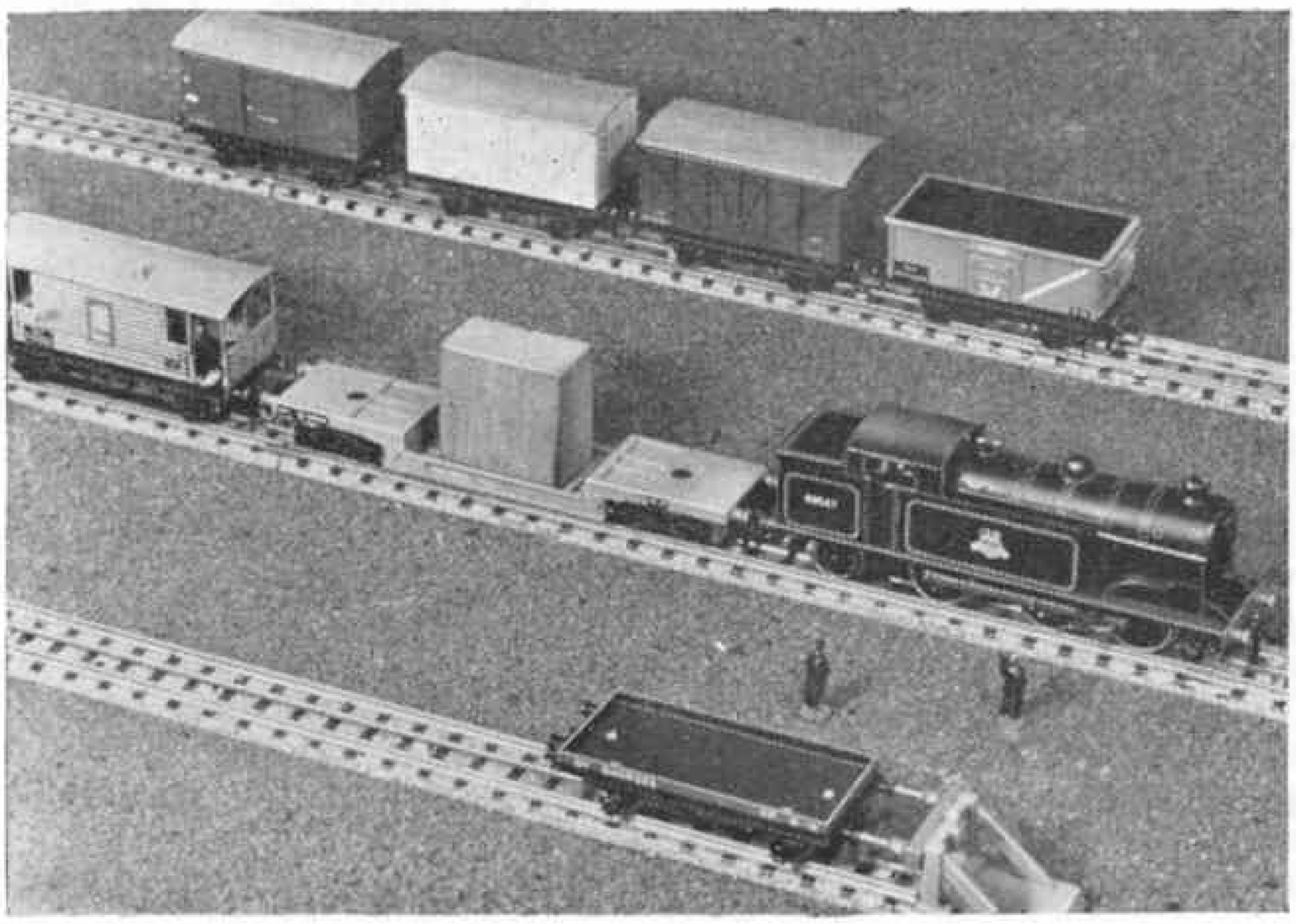


Making up a train in a Hornby-Dublo yard. The engine is drawing the vans out of a siding in order to couple them to the waiting wagons and brake van.

your Well Wagon. Meccano Parts can be used to represent various heavy engineering components, while those of you with a leaning towards boilers and similar cylindrical objects will readily be able to make up something suitable from a cardboard tube, a small round tin or even a length of round wood. It is surprising how such ordinary things can be disguised with the aid of a suitable wrapper of paper or thin card, painted and lined out to represent a boiler, drum or something similar.

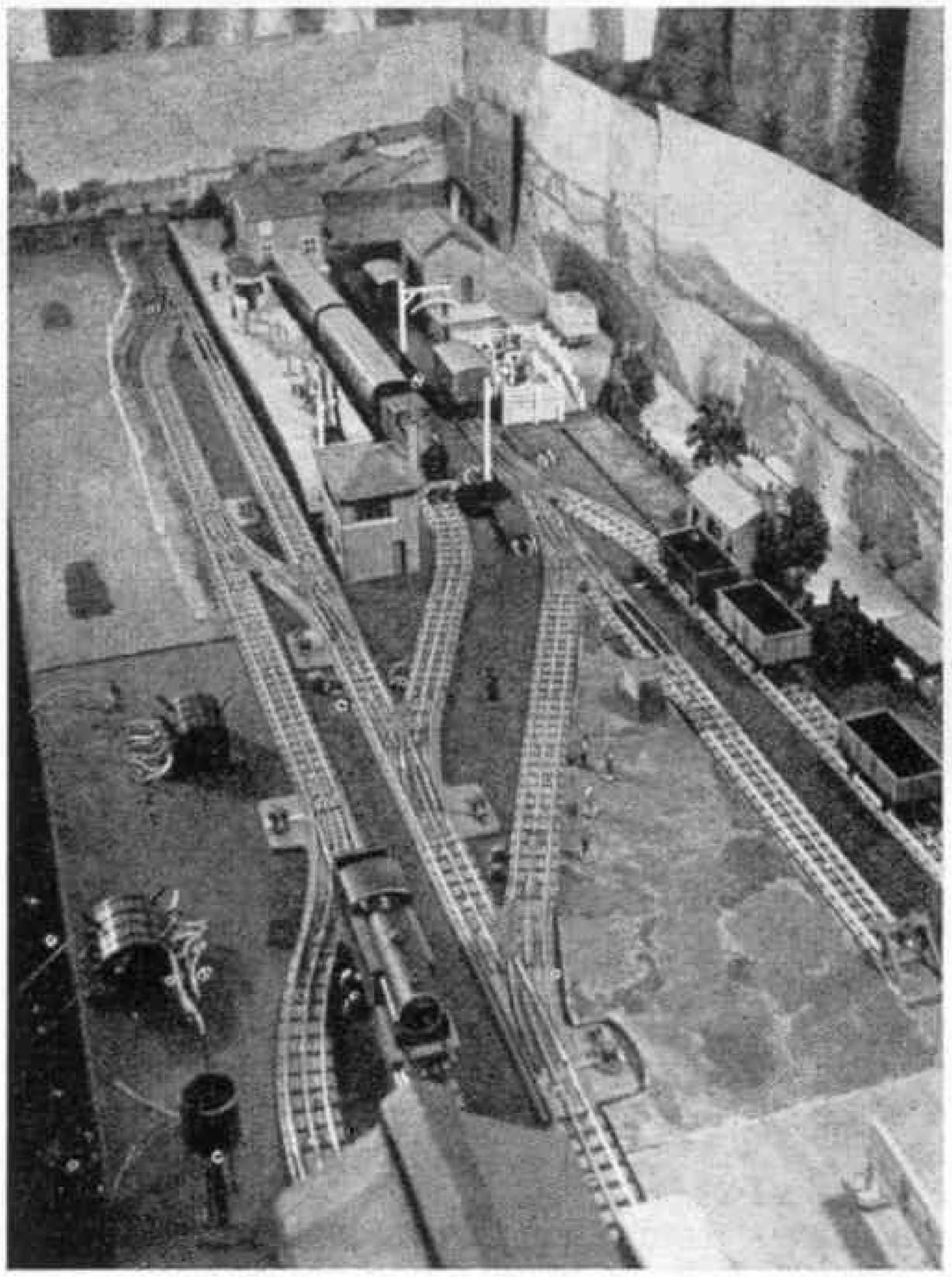
For one of my pictures I have used a neatly cut block of wood, the surface of which is sufficiently rough to represent a large block of stone, which might be on its way to be used in erecting a cathedral or church, or some other great building. Because certain loads will need to be secured, so that they do not move about when the Wagon is on the move there is in each corner of the floor of the well a small hole through which the Meccano Cord or similar material used for lashing can be passed. The wood block shown in the illustration was specially made to use as a load and fits nicely between the end cross-members, which are deeper than the others. Tying down therefore is perhaps unnecessary with it, but it adds realism to lash it down.

The general style and finish of the Well Wagon make it a worthy addition to the other die-cast Wagons already in the System, such as the Mineral Wagon, the Bogie Bolster Wagon and the Low-Sided Wagon. Many of you have asked over and over again for further vehicles of similar construction, and I am sure that you will not be disappointed with the Well Wagon. Those of you who add this Wagon to your railway will, I am certain, lose no time in telling me of the special loads that you arrange for it.



Another view showing to advantage the Bogie Well Wagon among other Hornby-Dublo vehicles.

Between Wye and Humble



The view above shows the terminus and goods yard at Wye on the Hornby-Dublo layout of Mr. G. A. Scott of Winchmore Hill. The coal yard and sidings are on the right hand side of the picture.

THE diagram reproduced on the opposite page shows part of a layout only, and possibly some of you may wonder why this is so. The answer is that the part of the Hornby-Dublo railway that is not shown in diagram form appears very clearly in the illustration on this page. From the different views shown it will be realised that the layout as a whole, which belongs to *M.M.* reader Mr. G. A. Scott, of Winchmore Hill, consists of an oval main track, one side of which is extended considerably and developed to serve a terminus of the small country town style.

This terminus is in the town of *Wye*, which has a neighbour, inside the main oval track, in the village of *Humble*. The platform at *Humble* is laid down alongside a single track branching inward from the main oval and to disguise the fact from the people of *Humble* that the main line is continuous there is a sharply-rising hill beyond the station yard, through which the main line is carried in a tunnel.

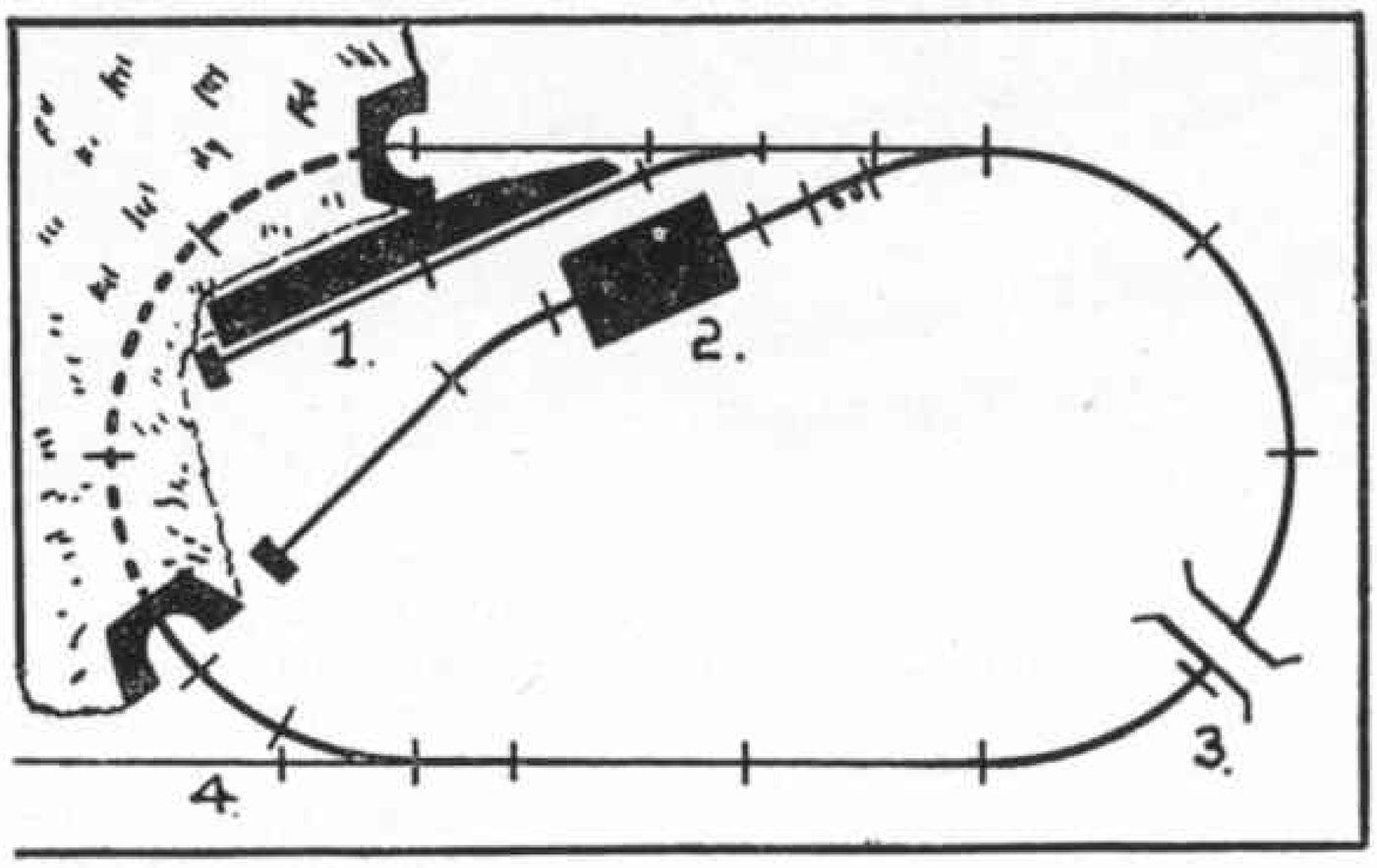
This hill and tunnel structure helps to fill what might otherwise be a rather awkward corner and it allows the owner to follow up the idea that train running is more effective if the train is out of sight for some part of its journey, even if only for a moment. There is a good deal to be said for this idea, as those of you who have not applied it will quickly find.

Track details of the main line section are clearly shown in the diagram, and if you look at the rest of the railway in the picture on this page you will see that the single line extension leading to the platform at *Wye* throws off two tracks on the right hand as it approaches. The first of these runs towards the Goods and Coal Depots and there are two trailing connections to tracks where coal wagons are dealt with. These show up clearly on the right hand side of the picture. Beyond the coal sidings, looking into the far corner of the layout, there is a cattle pen and a goods platform, with the usual small-type warehouse building.

The second track diverging from the main line runs to the back of the main island platform, ending in a bay just short of the station buildings. This is a characteristic arrangement found at many stations. The main arrival track runs right along the other side to the far end of the platform. As the illustration shows, there is a loop line that allows arriving engines to get round their trains, or alternatively to go to the engine sidings or sheds, which just show in the lower part of the illustration. A point to notice is that on the arrival track there is an Uncoupling Rail, the placing of which has been carefully worked out in relation to the loop Points at the arrival end. Attention to details of this kind can make all the difference to the successful operation of a layout.

So much for this end of the railway.

At the other station, *Humble*, lack of space has made it necessary to restrict the facilities to a single platform line for passenger traffic and a somewhat longer single line for goods, coal and so on. There is of course no running round loop and there is no Uncoupling Rail at the passenger platform, but this difficulty is overcome by running push-pull passenger trains only into *Humble*. This type of service eliminates running round, the coaches being pulled by the engine in one direction, and propelled by it on the return journey.



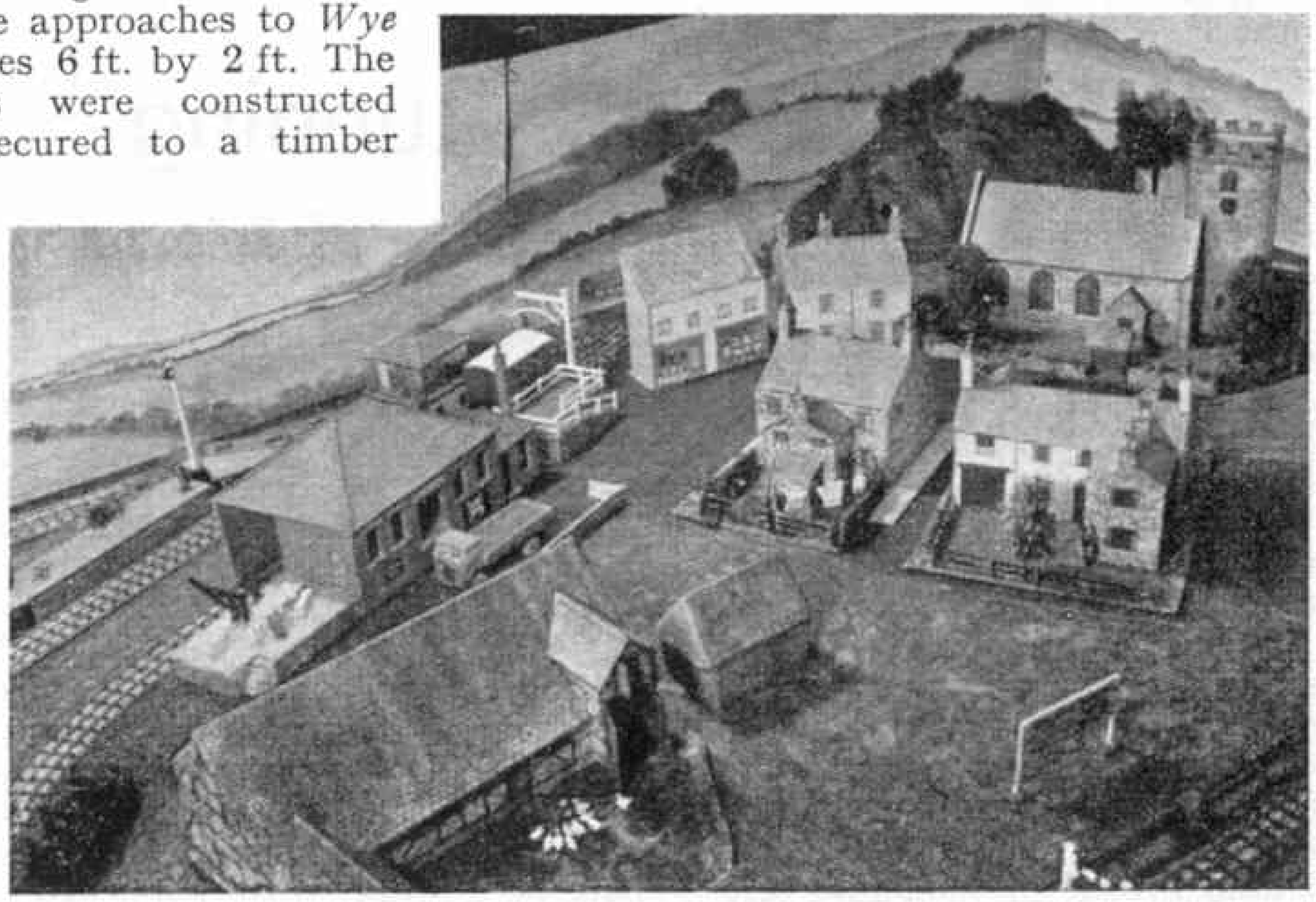
This diagram shows the continuous part of the layout. The numbered items are: 1, Humble Station; 2, Goods Depot; 3, Road bridge; 4, Main Line to Wye.

The layout is regarded as a portable one by the owner, so the baseboard is arranged in two main sections. That part shown in the diagram occupies a baseboard 6 ft. by 3 ft., while the adjoining board on which the station and the approaches to *Wye* are carried measures 6 ft. by 2 ft. The individual sections were constructed from hardboard secured to a timber frame, with supporting battens placed at fairly close intervals. This sound construction means that the boards can readily be stored away without fear of damage or distortion.

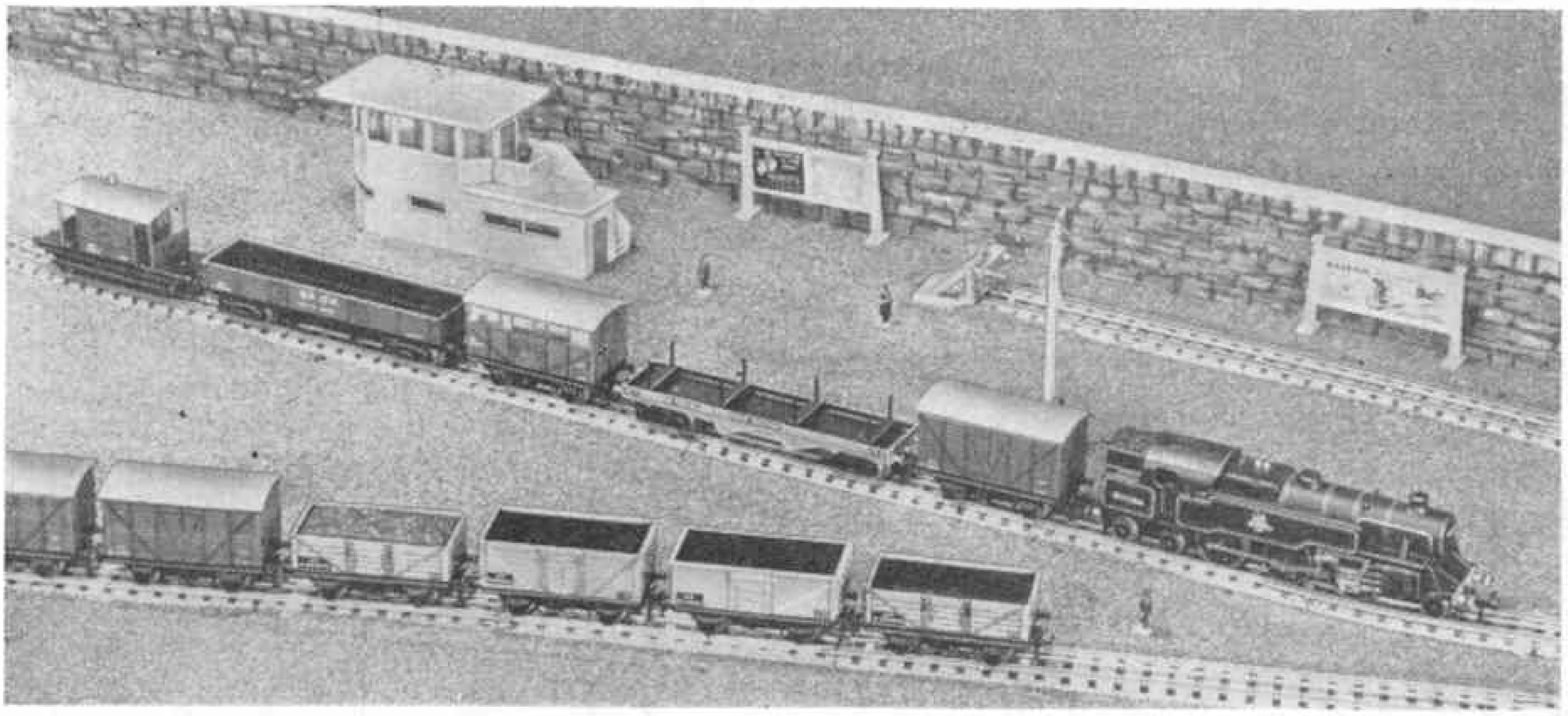
Good use is made of Hornby-Dublo Electrically-Operated Points and Signals, but there are hand-operated Points in use as well, particularly those within easy reach of the normal control position, where the switch levers controlling Points, Signals and various isolating sections can be seen at the edge of the baseboard. The isolating sections are well placed in view of the different movements to be carried out and there is even one of these sections in the tunnel. This allows a train to be put in there out of sight for the time being, while other operations are in progress at either station.

The railway is well provided for in the matter of locomotive power, for in addition to the two 0–6–2 Tanks that appear in the illustration opposite, there is a *Duchess of Montrose* express engine and one of the newer 2–6–4 Tanks. Six Coaches and 14 Goods Vehicles of various types suffice for the traffic on the line.

Although the railway is a portable one, good scenic and lineside effects are provided and the general result can be gathered from the two illustrations here. Many of the buildings have been put together at home from the various kits that can be obtained nowadays. The actual background layout, which was designed to suit the layout specially, was painted with poster paints by the owner of the line.



A close-up view of Humble village, with the goods depot to the left of the picture.



In the illustration above the Hornby-Dublo 2-6-4 Tank is leaving the yard with a train of varied freight stock. It is a powerful engine for this kind of work.

Engine Running

Variety the Keynote of Enjoyment

THE locomotive running side of a Hornby-Dublo railway is a very fascinating part of the general operation of the line. It goes without saying that it is important to keep engines in good working order and most Hornby-Dublo owners are fairly careful about this sort of thing. With constant use the Hornby-Dublo owner soon becomes familiar with his engines and is able to deal with their cleaning and maintenance in a satisfactory manner. If the engines are neglected then probably the rest of the railway will be too, and then one cannot expect to obtain the reliable trouble-free running that contributes so much to the pleasure of operating the system.

Apart from maintaining good mechanical condition the term engine running also involves the duties on which we can employ our different engines. We may be accustomed to associating them with the particular Train Sets in which they appear, but in working a railway it frequently becomes necessary to give a wider range of jobs to each type because of the variety of traffic that we wish to work.

When considering the large 4–6–2 express engines *Duchess of Montrose* and *Silver King*, it is an obvious move to use them on the heaviest and most important expresses. Long-distance working is readily reproduced even on the average Hornby-Dublo layout of moderate size. There is almost sure to be a continuous main line on which it is possible to have lots of fun carrying out long runs, with suitable station stops according to the requirements of the working programme.

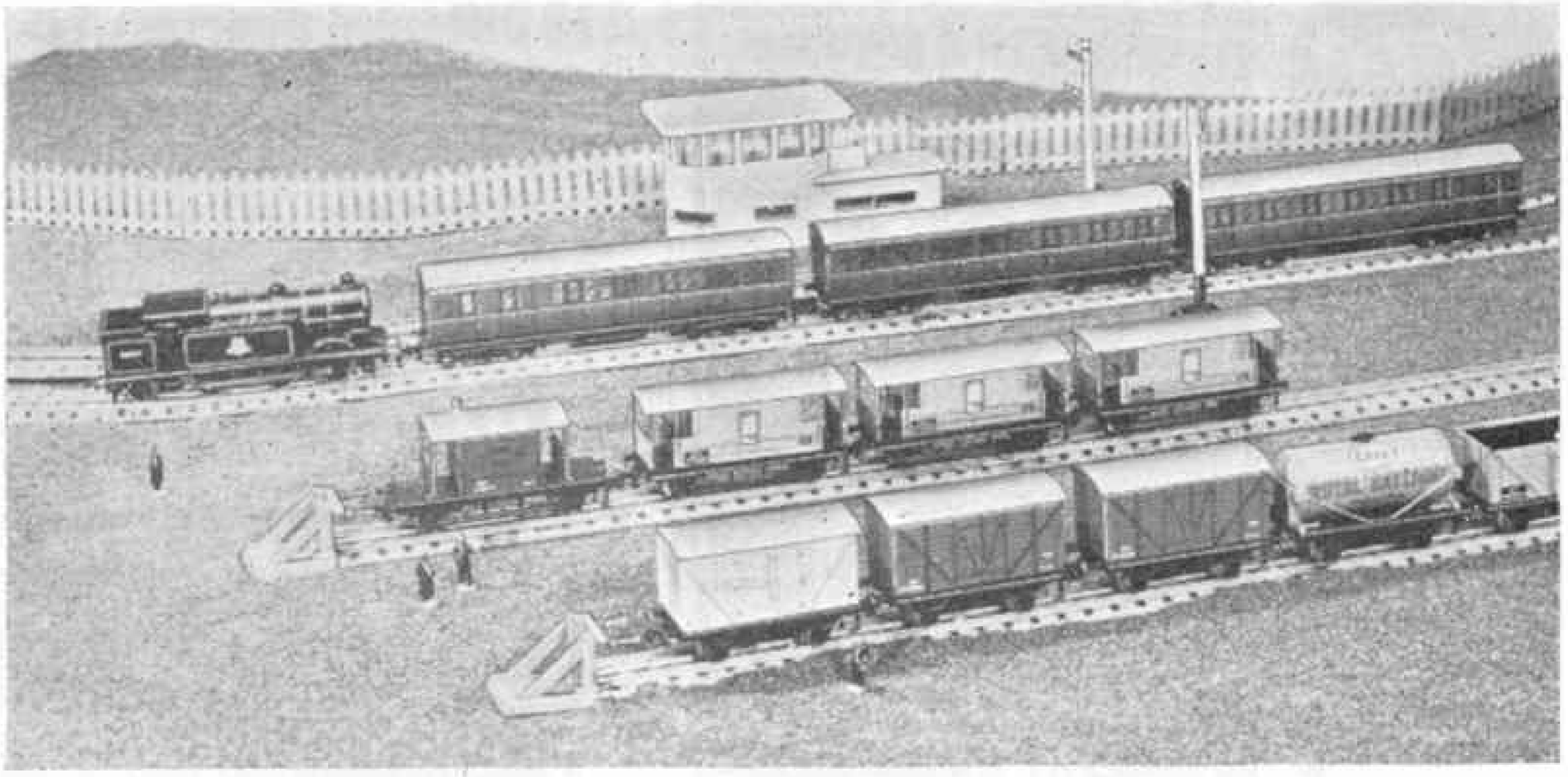
There is, however, no need to confine the big engines to this type of work all the time. They can quite reasonably work a less important train or two in between turns on main line expresses. Such things do happen in real practice. So we will be quite in order, therefore, if we run a three-coach suburban train behind even *Duchess of Montrose* in order to provide a secondary train service that fits in with our other working arrangements.

Similarly, the larger passenger locomotives of the 4–6–2 type, particularly those working over what was formerly the L.N.E.R system, do lend a hand at times in running fast freight trains. So in Hornby-Dublo important goods services consisting of Vans only can be run quite correctly behind our A4 *Silver King*. We can arrange a turn of this kind after every so many passenger journeys, but of course the exact arrangement of duties will depend a great deal on the individual layout and on the engine duties generally.

The newest locomotive in the Hornby-Dublo system, the well-known and popular EDL18 2–6–4 Tank is an excellent mixed-traffic engine. In addition to its usual work with suburban trains it can also

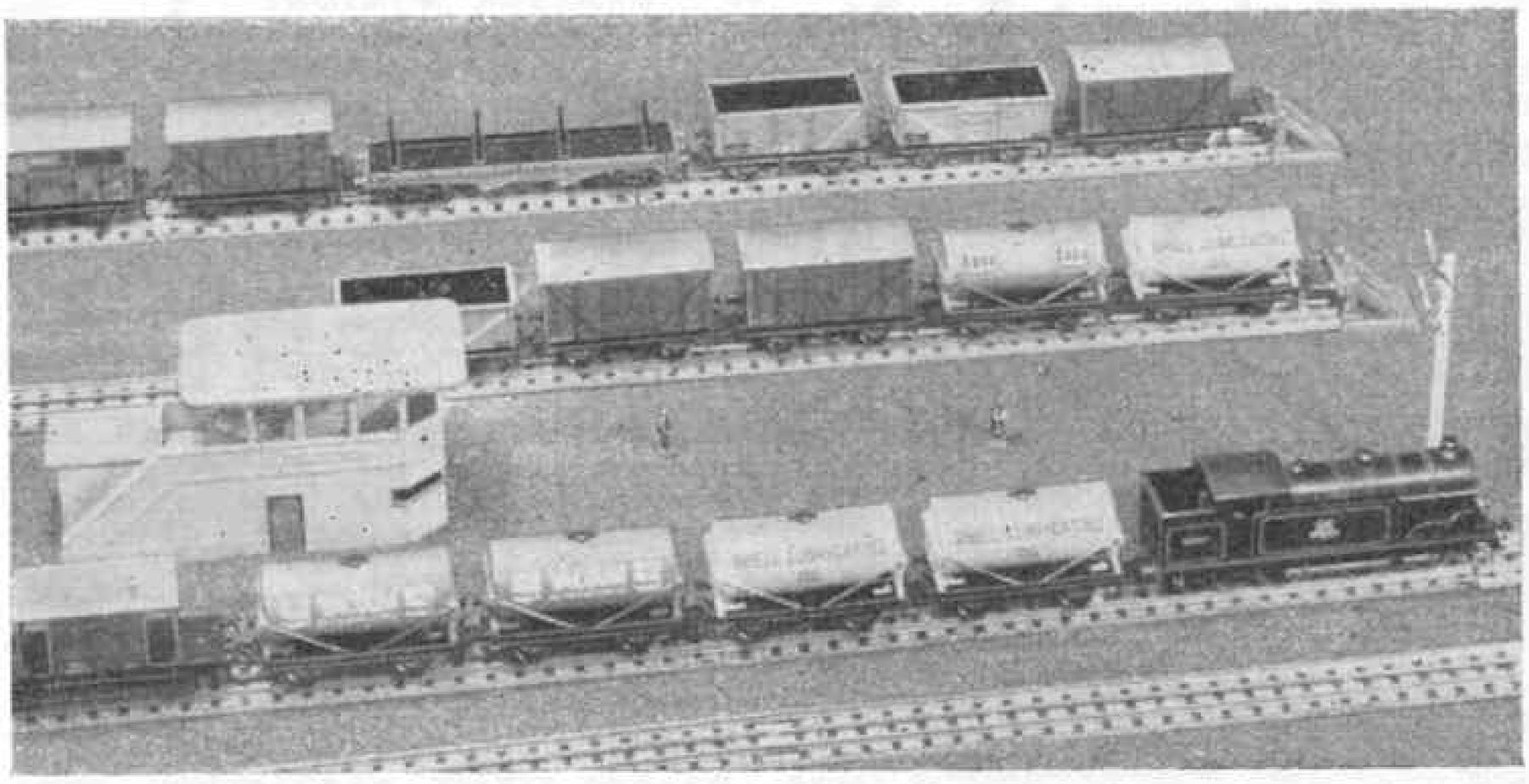
take a turn in express working, particularly where one or two coaches forming part of a main line express are being run over part of the journey, either before or after their main line trip. Tank engines in real practice frequently carry out jobs of this kind and the miniature railway owner is always ready to seize the opportunity of reproducing such working in miniature. And a 2–6–4T at the head of a train of D12 Corridors looks really well.

The powerful characteristics of this locomotive make it a very good one for freight service too, and there must be very many of these engines carrying out a great deal of goods train working on Hornby-Dublo railways everywhere. In many instances the working of these trains involves a certain amount of shunting here and there in the course of a journey, and where this kind of work is called for the Hornby-Dublo 2–6–4 Tank is usually found very suitable. The controllability of the engine at low speeds makes it possible to obtain very realistic shunting effects that will delight the keen Hornby-Dublo owner, especially if he has taken the trouble beforehand to work out the different moves correctly, and to practice their operation until he has them really well organised.



A suburban train on a Hornby-Dublo layout in charge of the familiar 0-6-2 Tank. This engine is quite suitable for passenger train working.

The smaller Hornby-Dublo EDL17 0–6–2 Tank has a splendid reputation for hard and varied work. In the two illustrations on this page you can see it busily engaged on entirely different duties. It is reasonable for it to take turns with the larger 2–6–4 Tank on suburban passenger trains and of course it is a most useful engine for shunting empty carriage work, and so on. In the lower illustration there is an 0–6–2 Tank moving along quite happily with a train of Tank Wagons. Probably these are on the way back to refineries for refilling and further useful journeys. There should always be a reason for the running of any of our trains and for the use of any particular engine.



Tank wagon empties on the run behind the Hornby-Dublo 0-6-2 Tank, a popular engine for local goods work.

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For other Stamp Advertisements see also pages 632 and xx

Stamp Collectors' Corner

By F. E. Metcalfe

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STAMP BOOKLETS

ONE of the most popular sidelines with stamp collectors, both here in Britain and in the U.S.A.—perhaps indeed more in the latter country than the former—is stamp booklets. You know the kind of thing I mean, those neat little affairs you can buy at the post office, which contain a handy selection of stamps for postage on letters and postcards. Recently I mentioned that later on I would probably deal with these items, and as letters that have arrived point to the fact that *M.M.* readers are interested in the subject, I am taking an early opportunity to implement the promise I made.

Now let me point out right away that all there is to say about booklets would fill more than an issue of the Magazine and, to be quite candid, I do not think our Editor would stand for that! Booklets, like stamps, have all kinds of varieties. For instance, Mr. Harry Linquist, the publisher of *Stamps* of New York, has recently donated his collection to an American museum. He only went in for the booklets of France, and gathered in all 500, each of which differed in one way or another from the others.

GPO

5/- STAMPS 5/-

12 at 2½d.; 6 at 2d.; 6 at 1½d.; 6 at 1d.; 6 at ½d.

4d MINIMUM FOREIGN LETTER RATE 4d

For exceptions see inside back cover

I don't suppose that many readers would like to specialise to such a degree as that. But it will be seen how big the subject can be, if carried to unlimited lengths. So I propose to deal in this article only with the booklets issued in the Commonwealth during the present reign. All these will be found listed in the 1956 edition of the Commonwealth Catalogue of Queen Elizabeth Stamps, for anyone who wants a permanent record. It was decided to include them this year, as a number of users of that catalogue had asked for them.

We will take the booklets of Great Britain first. These deserve their pride of place for, apart from other considerations, they are by far the most interesting of all those that have been issued in the Commonwealth.

As most of you know, our post offices have four kinds of booklet. One contains panes of ½d., 1d., 1½d. and 2½d. stamps to the total face value of 2/6. Another contains nothing else but eighteen 2½d. stamps, and there are also 5/– booklets with ½d., 1d., 1½d., 2d. and 2½d. values, and the so called experimental booklets, with pairs of ½d., 1d. and 1½d. stamps.

There is of course a lot more to it than that. In the first place, the stamps are sometimes different from the ordinary issues sold from sheets over the post office counter. Collectors are interested in watermarks and it is from the booklets that we get those varieties which have their watermarks inverted. Stamps are specially printed for booklets, and as these inverted watermarks are the result of these special printings, they are of philatelic interest. So they are entitled to a place in the catalogue, which is the reason why they are listed in the Commonwealth Catalogue. I have often been questioned on this point, and that is the answer.

There is another interesting variety among the booklet stamps themselves, In the 2/6 booklet is a pane that contains a strip of three 1d. stamps, with three labels with different slogans attached. These also have been given catalogue recognition, and full details of the various slogans that exist can be found there.

That is about as much as need be said about the stamps themselves, but the make-up of the booklets provides plenty of scope for study.

We are dealing here only with Q.E. booklets. The first to appear after the Queen ascended the throne contained not only stamps of this reign, but also stamps of the previous one. There is no room to go into full details. It is sufficient to say that some of these composite booklets, as they are called, are quite valuable. One of the best is a 5/– booklet containing panes of ½d., 1½d. and 2½d., Q.E., and 1d. and 2d. K.G. VI stamps. Such a booklet is dated March 1954 and is worth several pounds.

GPO

2/6 STAMPS 2/6

6 at 2½d.; 6 at 1½d.; 3 at 1d.; 6 at ½d.

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Now if you look at the back of the booklets you will see the dates of issue at the right bottom corner. But I do not consider these dates of any particular importance. It is the make-up of the books that is of interest, so they have been catalogued separately where they differ in this respect. There is the question of interleaving. With the exception of the 3/9 booklets—and by the time these lines appear in print, these also may be interleaved, for I have been (*Continued on page 634*)

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Printed in full colours, gummed and perforated just like stamps, they are ideal for illustrating stamp albums.

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A FINE USED COPY OF THIS STAMP WILL BE SENT **FREE** TO ALL APPLICANTS FOR OUR FAMOUS COLONIAL APPROVALS ENCLOSING 2½d. STAMP.

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G. P. KEEF — WILLINGDON — EASTBOURNE

1,000 STAMPS 7/6

ALL DIFFERENT. NO GREAT BRITAIN
500, 3/6. 250, 1/9. 100, 10d.
Br. Empire: 100, **1/6**; 200, **3/6**; 300, **7/3**; 500, **15/6**; 1000, **45/-**. Triangulars: 10, **1/6**; 25, **4/6**; 50, **10/-**; 100, **30/-**; Rly. Engines: 15, **1/6**; 25, **2/6**; 50, **5/6**. Maps: 10, **1/6**; 25, **2/9**. Ships: 10, **1/3**; 25, **2/6**. Postage 2½d. extra. All current British Colonial mint stamps in stock, including Coronation stamps and all new Elizabethan issues. Lists on request.

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Q.E.II SINGAPORE

Two of the **NEW PICTORIALS** from **SINGAPORE,** depicting **STRANGE SHIPS** of the **FAR EAST,** are included in this month's packet of **10 Q.E. STAMPS** given **ABSOLUTELY FREE** to all applicants for my **6d. in 1/- DISCOUNT APPROVALS.** Postage paid one way. (Overseas customers must send 4 reply coupons).

M. THEOBALD (MM52),
6 DELL CORNER, WEST DRAYTON, MIDDLESEX

For other Stamp Advertisements see also pages 630 and xx

Stamp Gossip

BACK TO IT

THESE lines are being written while the Sun is burning up the garden, but by the time they come to be read there will be that occasional nip in the air which makes indoors not a bad place, in the evening at any rate. Collections will have been dug out of their summer quarters, with some of the stamps worth perhaps a little bit more than when they were put away, for it has been a good summer on the whole, with many collectors still keeping their eyes open for new stamps, and some values have moved up.

Alas, those who put off buying that album they needed earlier in the year will now have to pay an extra 25 per cent., for that is roughly the proportion by which albums have increased in price during the past month or two. Even at today's prices, it can be said that albums will never be as cheap again as they are now. Prices are eternally on the rise, be it for philatelic accessories or anything else. So if you need an album, there is no point in putting off the purchase any longer.

SOUTH AFRICA

In the British Commonwealth the stamps of South Africa are just about as popular as any others. They are my favourites, for the modern issues contain such a wealth of philatelic fare. Every kind of variety is to be found. I am referring now to the definitive issues, for I am afraid that the commemoratives are not quite so interesting, though there are one or two nice little items.

Hawk eyed collectors—how annoyed stamp printers must get when we discover the slightest error, or flaw—will be on the lookout for varieties to be found on the two commemorative stamps issued on the 21st October in honour of the centenary of Pretoria. The stamps are a 3d., showing a portrait of President Kruger, and a 6d., depicting President Pretorius, who was the first President of the Transvaal. Pretoria was founded by the son of Pretorius, who named the city after his father. This pair of stamps will only cost a copper or two used, so all collectors will be able to get them.

PROPHETS IN THEIR OWN COUNTRY

It is generally well known nowadays what wonderful work Florence Nightingale did for our soldiers a century ago and how she fought brass hat officialdom, which is always with us in a greater or lesser degree. But while her portrait has already appeared on the postage stamps of several foreign countries, it has been left to our sister nation Australia to do her honour in the century year.

The stamp, which appeared on 21st September and is illustrated here, shows that fine woman, in the background, with a nurse in modern dress in the forefront.

Australia is rightly commemorating most of the great events as they pass along, by issuing a stamp or stamps. This truly cements these happenings in our minds in a manner that could not be accomplished so thoroughly in any other way. One day our own country will realise what a wonderful publicity weapon they are throwing away by not following suit. Then collectors will have a heyday, so many are the events that Britain can commemorate.

NEW YEAR 5716

Some will rub their eyes when they see that date. But there is no mistake, for that is the year according to the Jewish calendar. To commemorate it Israel, which is producing today some of the world's most beautiful stamps, released a set of four stamps in August. I do wish there was room to illustrate all four, but alas I can only ask the Editor to allow me to show one. But this specimen will give some idea what an interesting set we are dealing with.

Each stamp of the set shows a musician playing an instrument, such as those used in Biblical times. I have picked the one showing a harp. This is very different from the kind in use today, but no doubt the sound given out then would not differ a whole lot.

BIG COLLECTIONS

How about a stamp collection worth getting on for a million pounds? No, you are not dreaming. There really is such a valuable collection, and while it belonged to an American who died recently, the American branch of a British firm of auctioneers has been appointed to sell it.

The collector was named Caspary, and his collection consisted of 50,000 stamps. There is nothing very particular about the number; the distinction was in the quality of the stamps, and it had taken a lifetime and unlimited cash to get them all together.

Interesting as is the news about the collection, it is the fact that a British firm has been given the job of dispersing it that is of such account.

WHAT IS IT?

I have just room to show a copy of a Viet-Nam stamp. A reader has asked me what the animal is, and is there one in the London Zoo. I had to reply that I had never seen one. Have any *M.M.* readers?

Flying the Air Ferry—(*Continued from page 587*)

At other times, he has delivered Freighters to the Royal Pakistan Air Force, Doves to the Far East, and flown private charter trips all over Africa for the wife of a famous industrialist.

To vary the work still further, the company gives its pilots a tour of duty with one of its associates, Air Kruise Ltd., whose Dakotas carry many thousands of tourists to some of the most beautiful places on the Continent, including Venice, Turin, Geneva, Paris, Dusseldorf and Basle. Many of these tourists are members of coach parties; because the owners of the coaches have discovered that it is cheaper and quicker to drive down to Ferryfield and fly their passengers to a convenient point on the Continent, where a second coach can collect them for their tour, rather than to send coaches across the water by boat.

At the moment, Captain Rosser is Chief Pilot of Air Kruise, and enjoying it a great deal, despite the fact that some of his regular services start in the very early hours of the morning. In fact, there is little doubt that for him flying interesting people to interesting places is an extremely pleasant way of making a living.

Volcano in Eruption—(*Continued from page 589*)

30 miles distant, these sounds were heard frequently over a long period and the place was shaken furiously as the angry mountain vented its wrath. Even in Napier we heard dull, booming sounds one evening last winter and felt the thud of a particularly furious outburst. It was just as if some terrifically heavy object had been thrown against the house with great force.

The Haweswater Aqueduct—(*Continued from page 596*)

be admitted to this 82-mile pipeline to run freely all the way to Manchester. The flow has to be carefully controlled, and automatic valves have been installed for this purpose. Meters show the difference in flow between any individual valve and those immediately upstream and downstream, and the automatic control gear can be set to respond to any desired degree of leakage. It will be equally responsive to a leak in any position along the pipeline.

A multi-core electric cable laid alongside the Aqueduct enables flow measurements to be transmitted electrically, and there are also wires providing telephone communication between the valve houses. In suitable places there are side weir overflows, with concrete pipelines of sufficient capacity to discharge any water that becomes surplus on the closing down of a valve to the nearest stream or other suitable point of discharge.

For the information in this article and for the illustrations I am indebted to A. Atkinson, M.Eng., M.I.C.E., M.I.W.E., Engineer and Manager, Manchester Corporation Waterworks.

Road and Track—(*Continued from page 591*)

proud of the fact that the speed and efficiency of his pit staff is second to none. There is no doubt that John Wyer is on top of his job, calmly handling some thirty drivers, mechanics, timekeepers and lap scorers, knowing full well that a single error in race of pit control can ruin the chances of the team cars.

Wyer's work is his hobby—and the only one. His "know how" is such that sarcasm greets foolishness, but he is also very fair when things go wrong. He does not throw his weight about and has that rare quality of making an order sound like a suggestion. The team gets together some days prior to a race for practice, sometimes travelling to the circuit by the Aston Martin private plane, as they did for the T.T., sometimes arriving independently. And whatever the outcome of a race the team drivers share the prize and any starting money.

Who would not like to see David Brown build a Formula 1 car? A few weeks ago I was able to ask him whether one will be built. His reply was typical: "We believe in doing one thing at a time, and so far a successful organisation for racing sports cars has been built up. Racing a team of Formula 1 cars would require a far more complex organisation than we have at present, to enable us to compete on equal terms with our continental rivals."

"But," I said, "you *would* like to race a Formula 1 Aston-Martin one day."

"Yes," replied David Brown, "I should like to do that more than anything else."

Stamp Collector's Corner—(*Continued from page 631*)

told by the Post Office that there may be a change in this respect later—all British booklets are interleaved. That is to say, between each two panes of stamps is a page of paper. This is used in Great Britain for advertisements, and the money realised from these pays for the make-up of the booklets. So the Post Office can sell at face, and no doubt still make a profit. Yet in the U.S.A. and Canada, etc., they have to charge a cent over face. For once I think we can claim that our way is best.

There has been a lot of talk about watermark changes. It has already been admitted by the Post Office that later British stamps will have a new watermark with the crown of a different shape to fall in with the Queen's liking for the St. Edward's design. Though I don't suppose that many have noticed it, there has already been a change in the design of the crown used on the cover booklets. This can be seen from the illustrations; the lower cypher is the newer one.

These different crowns are also major varieties in the eyes of booklet collectors, so they too have been separated in the catalogue.

I said that the 2/6 and 5/– booklets are now fully interleaved. Previously they only had what are known as end papers or leaves, and these booklets also are considered as distinct from the fully interleaved varieties.

I have mentioned that some of the booklets have a mixture, which varies, of Q.E. II and K.G. VI stamps. As time goes on, these will be much sought after, so if you come across any just put them away. But, remember, some of them are not particularly scarce yet.

I will deal with the booklets of the rest of the Commonwealth next month. Some of them are very interesting and scarce. Also I will go into the question of how to mount your booklets. This is a rather tricky job.

THE COMMONWEALTH CATALOGUE OF QUEEN ELIZABETH STAMPS

This catalogue is now in its second enlarged edition. As a work of reference it can be regarded with complete confidence, for its Editor and those who have assisted him have specialised in the stamps that have appeared during the present reign, which already are surprisingly numerous. It has indeed been received with approval by stamp collectors all over the world.

In the section dealing with the stamps themselves details are given of all Crown Agents' releases. The stamps actually included are not only those that have been issued since the accession of Queen Elizabeth, but also those issued towards the end of the reign of her predecessor for which no plans had been made for replacement, providing that the designs bear no portrait or cipher to show that they were of the pre-Elizabethan era. Dates of issue of practically all stamps are given, with shades, numbers issued and of course values, mint and used, and concise but valuable notes are appended where necessary.

A new section deals with stamp booklets, which are becoming of increasing interest to collectors, with imprint, plate and cylinder blocks of Canada, New Zealand and South Africa.

There are plenty of illustrations, very well reproduced on good paper. The catalogue can be obtained from stamp dealers, price 1/–.

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Why is the Engine Stopping?

ON this page is a picture of two men who are very much on the job. Readers will instantly recognise them as a driver and fireman looking intently ahead from the cab of their engine. Actually the train is slowing down, with steam off and brakes applied, but the attitude of the two men indicates that they are not making a normal or expected stop. They are concerned of course, and are concentrating on something ahead. But they are not alarmed, and nothing in the nature of a mishap or accident is involved.

Why are the enginemen in this striking photograph by John Topham looking so intently ahead? In the Competition announced on this page you are invited to say what the reason may be.

We have chosen this picture as a competition subject this month because we would like to know what readers could suggest is the reason for their concern. Is it just that a signal is against them, or could there be something a bit more unusual, and if so what could it be? Do you recognise or know on which Region of British Railways the engine is used? All that we will say is that the outcome should be something that is allowed for in British Railways rules, which are carefully framed in the interests of safety, and which the men apply instinctively.

Your entry should take the form of a short account of what you think may have happened and what may follow. If you can think of more than one explanation, give the necessary details for all of them, but remember that there is nothing fantastic in the true explanation and nothing untoward should be considered.

There will be two sections in this contest, for Home and Overseas readers respectively, and in each prizes of 21/- 15/- and 10/6, will be awarded for the three best entries in order of merit with consolation prizes for entries just short of prize-winning standard. In the event of a tie judges will take originality of presentation into account. State name, address and age.

Entries must be addressed *Alert Enginemen Contest, Meccano Magazine*, Binns Road, Liverpool 13. Closing dates: Home Section 31st December, 1955; Overseas Section: 31st March, 1956.

Competition Result

JULY 1955 NAMED TRAINS CONTEST

Home Section

1st Prize: J. K. Bearsley, London S.W.10. 2nd Prize: T. S. Woods, Southport. 3rd Prize: F. W. Jenkins, Derby. Consolation Prizes: A. L. Thompson, Liverpool; R. Rutherford, Belfast; T. Carter, Birmingham; F. Lister, Bristol.

Fireside Fun

Mother: "Are you sure it was an accident when you hit Johnnie on the nose?"
Willie: "Yes, mother. I aimed for his eye!"

* * * *

Scoutmaster (unpacking camping equipment): "Good heavens, didn't you pack the liniment?"
Scout: "No, sir. It was labelled 'Not to be Taken'."

* * * *

Teacher: "If I take 85 from 109, what's the difference?"
Johnny: "That's what I say, Miss—who cares?"

* * * *

Visitor at farm: "These pigs have tremendous appetites!"
Farmer: "Don't worry. They'll soon be cured."

* * * *

Magistrate: "Haven't I seen you before somewhere?"
Prisoner: "Yes, sir, I had the honour of teaching your son to play the saxophone."
Magistrate: "H'm. Six month's hard labour."

* * * *

Jim: "What are you gathering fire-flies for?"
Jack: "For when I go fishing at night."

* * * *

Boss: "Johnson, what are you doing with your feet on the desk?"
Johnson: "Economy sir—my eraser wore out so I'm using my rubber heels."

* * * *

Tom: "Joe went to the fancy dress party all rigged up as Napoleon."
Jim: "Why?"
Tom: "Probably wanted to keep his hand on his wallet all the time."

* * * *

Charlie: "I'm head over heels in work."
Jack: "What's your job?"
Charlie: "Acrobat in a circus."

* * * *

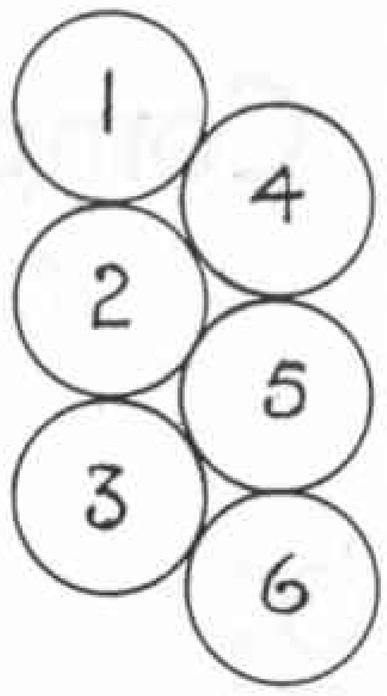
Johnson: "How about a battle of wits?"
Jackson: "Sorry, I never attack an unarmed man."

* * * *

Insurance Agent: "So you want your office furniture insured against theft?"
Business Man: "Yes, all except the clock. Everybody watches that."

BRAIN-TEASERS

A COIN PUZZLE



Lay six pennies on a table as shown in the sketch alongside. Now try to form them into a ring in three moves only. Only one coin may be moved at a time, and it is an essential condition that each coin moved must touch two other coins when it is in its new position.

* * * *

A CHARADE

My first with a hatchet you can do
My next's an interior word.
My whole's a musician of great renown.
Of whom no doubt you've heard.

* * * *

THE ISLAND FIRE PUZZLE

A pilot flying over a large grass-covered island, saw on it a shepherd and his sheep. At the North end of the island the pilot noticed a fire starting, and fanned by a strong northerly wind it threatened to sweep over the whole area. Escape by sea was impossible owing to steep cliffs, so the pilot flew back to his aerodrome to give warning. He then returned over the island, and was amazed to find that although the whole area was razed and the fire had burnt itself out, the shepherd and sheep were still there unharmed. How had they escaped the fire?

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

Pyramid of Meccano Parts

With the letters contained in the pyramid the names of the following eight Meccano Parts can be spelt. (1) Bolt; (2) Nut; (3) Strip; (4) Pulley; (5) Angle Bracket; (6) Spring Clip; (7) Collar; (8) Rod.

* * * *

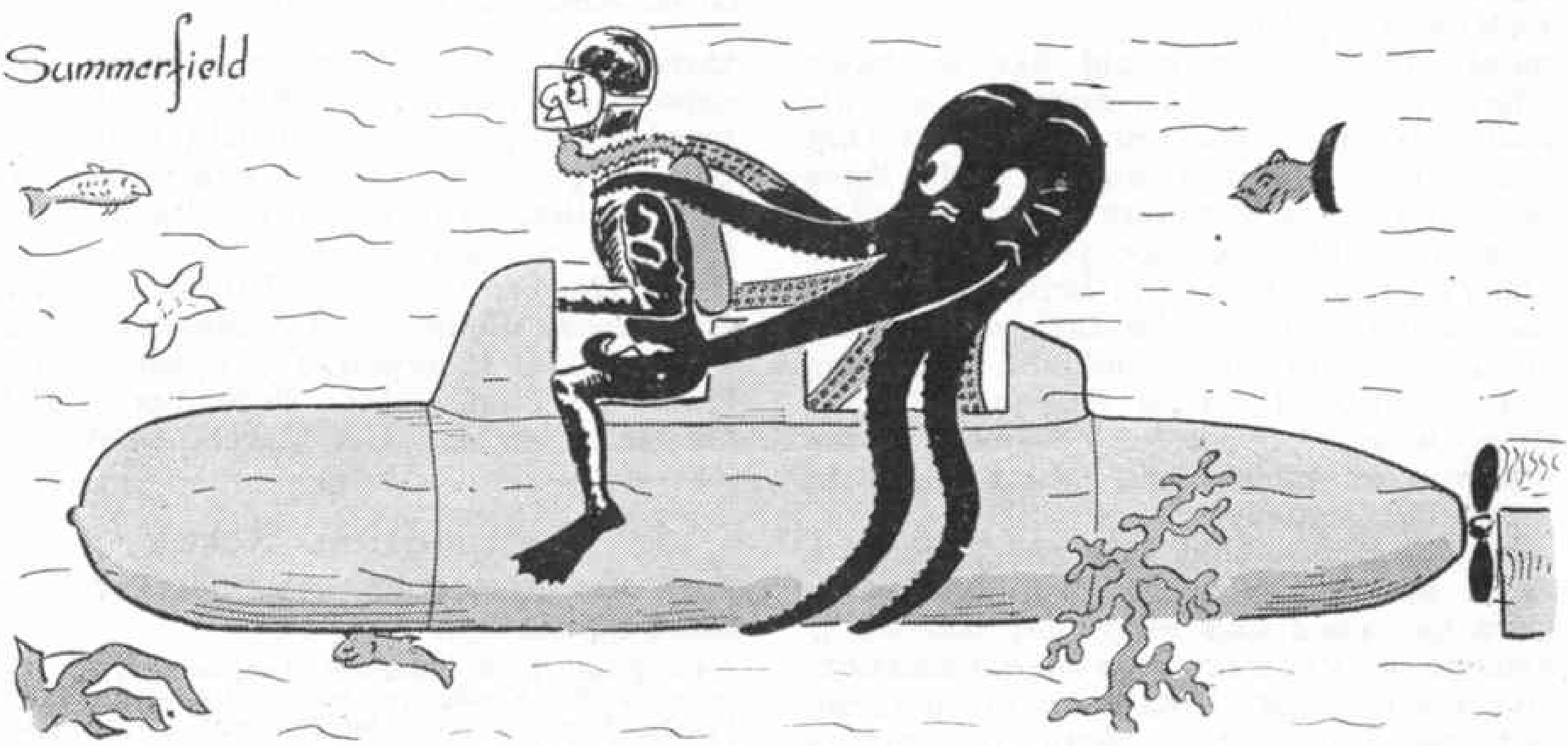
Missing Letters

The six groups of three letters should first be rearranged as follows: ATA; HAF; AST; REA; REA; RDE. By adding one letter before and after each group the following words can be formed, which answer the clues given. (1) FATAL; (2) SHAFT; (3) PASTE; (4) DREAD; (5) CREAM; (6) ORDER.

* * * *

Syllable Clues

The six words indicated by the clues given for each of their syllables are as follows: (1) Lollipop; (2) Warship; (3) Herbalist; (4) Catkin; (5) Foxhunt; (6) Cupboard.



"Do you have to hang on so tight, Fanshawe?"

Make extra prints of your summer snapshots

(it's so amazingly easy)

Even if you've never before printed snapshots, you can do so now with the Print-A-Snap Pack. A printing frame for exposing the paper and negative by ordinary electric light, powders to make up the developing and fixing solutions are all provided. Wash and dry your prints and there you are. You would never have thought that making prints could be so easy. No darkroom, no equipment is needed.

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THE JOHNSON PRINT-A-SNAP PACK

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Make Leisure a Pleasure with Hobbies

Every ship modelling enthusiast will want to make Hobbies latest 7 in. miniature galleon, the "King's Ship" (on left). The kit and building instructions for this cost only 7/6. The 12 in. Bounty (12/–) illustrated below, and 8 in. Bonaventure (6/6) are other popular choices.

Details of other famous galleon kits available, ranging in price from 5/3 to 57/– are contained in the free booklet: "Profitable Leisure." Fill in coupon below or send postcard.

Hobbies 1956 Handbook is a "must" for all fretworkers, modellers and handymen. 152 pages showing you how to get the most from your hobby and containing a free design for Hobbies' latest galleon the "Royal Charles."

To HOBBIES LTD., Dept. 962, Dereham, Norfolk.
Please send free 20 page booklet and items marked thus X.

King's Ship Kit No. 3108, 7/6, post free.	Bonaventure Kit No. 3014, 6/6, post free.
Bounty Kit No. 2812, 12/–, post free.	Hobbies 1956 Handbook, 2/3, post free.

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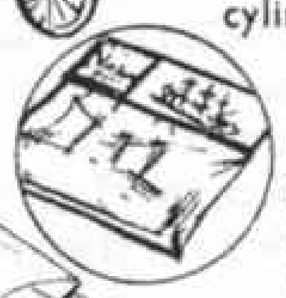
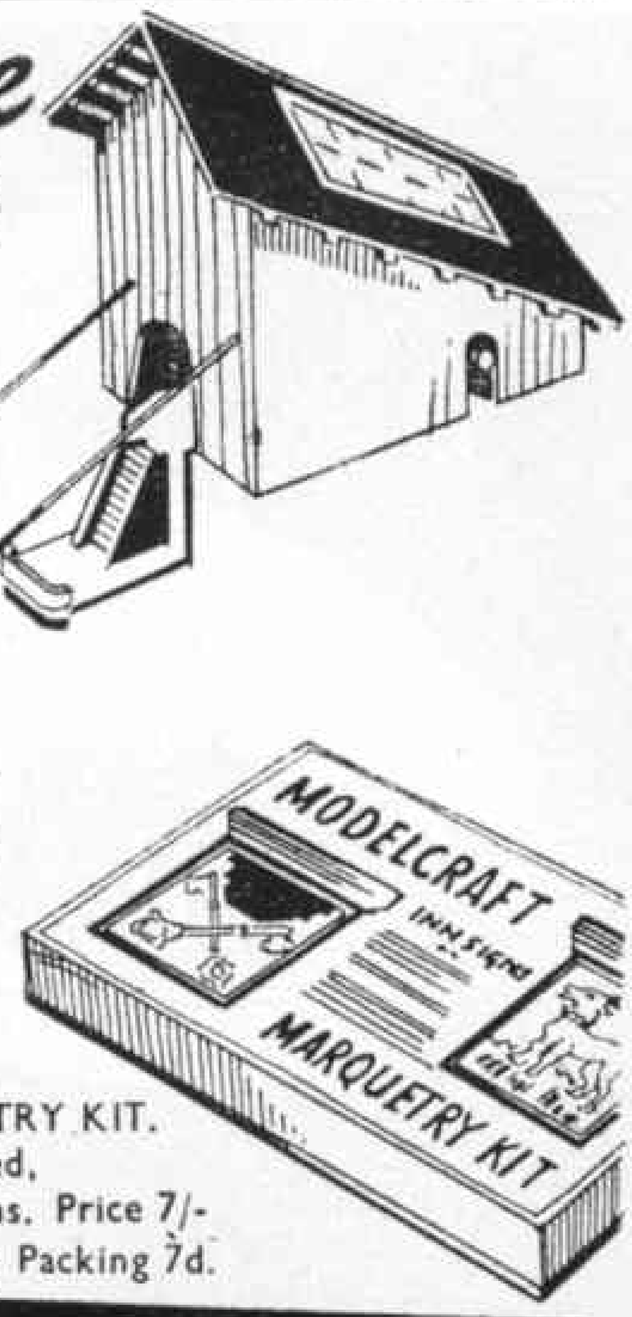


H.M.S. VICTORY, **Airfix** construction kit, easy to build and decorate. Price 2/- Cement 6d. extra. Carr. & Packing 5d. Other ships also available.



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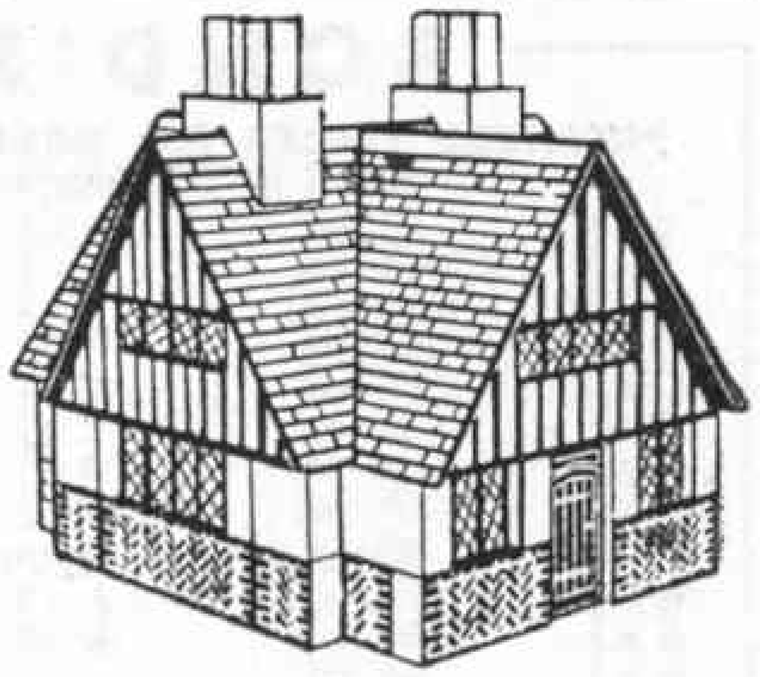

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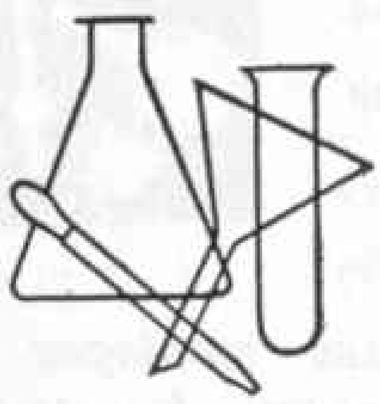
Sets from 6/11 to 57/6



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1 × 1/8	7½d. yd.	1 × 1/4	9d. yd.
1½ × 1/8	9d. yd.	1½ × 1/4	1/- yd.
2 × 1/8	1/- yd.	2 × 1/4	1/3 yd.
3 × 1/8	1/6 yd.	3 × 1/4	1/9 yd.
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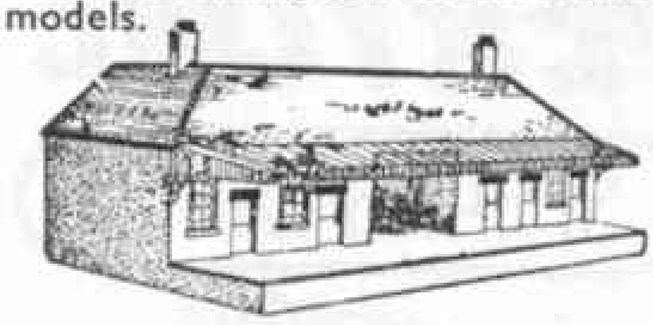

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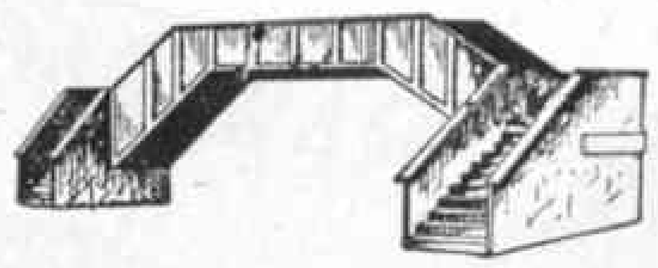

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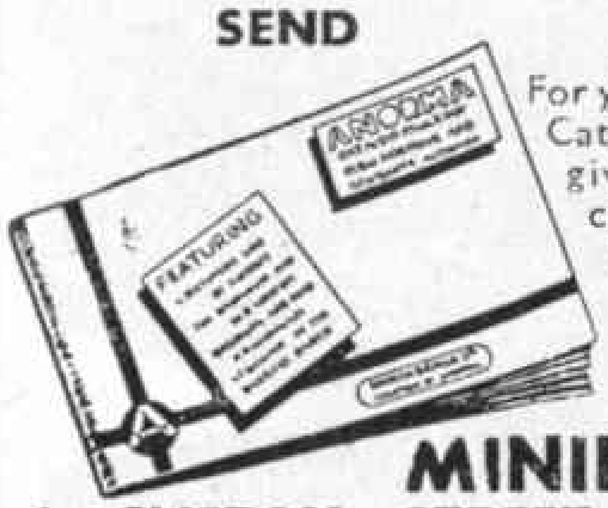

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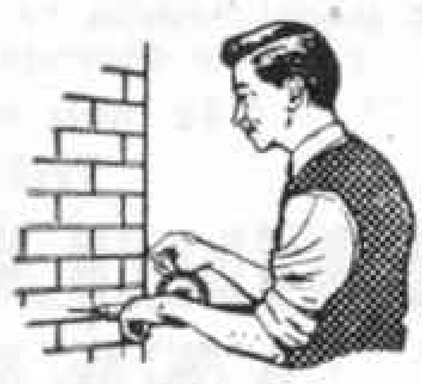

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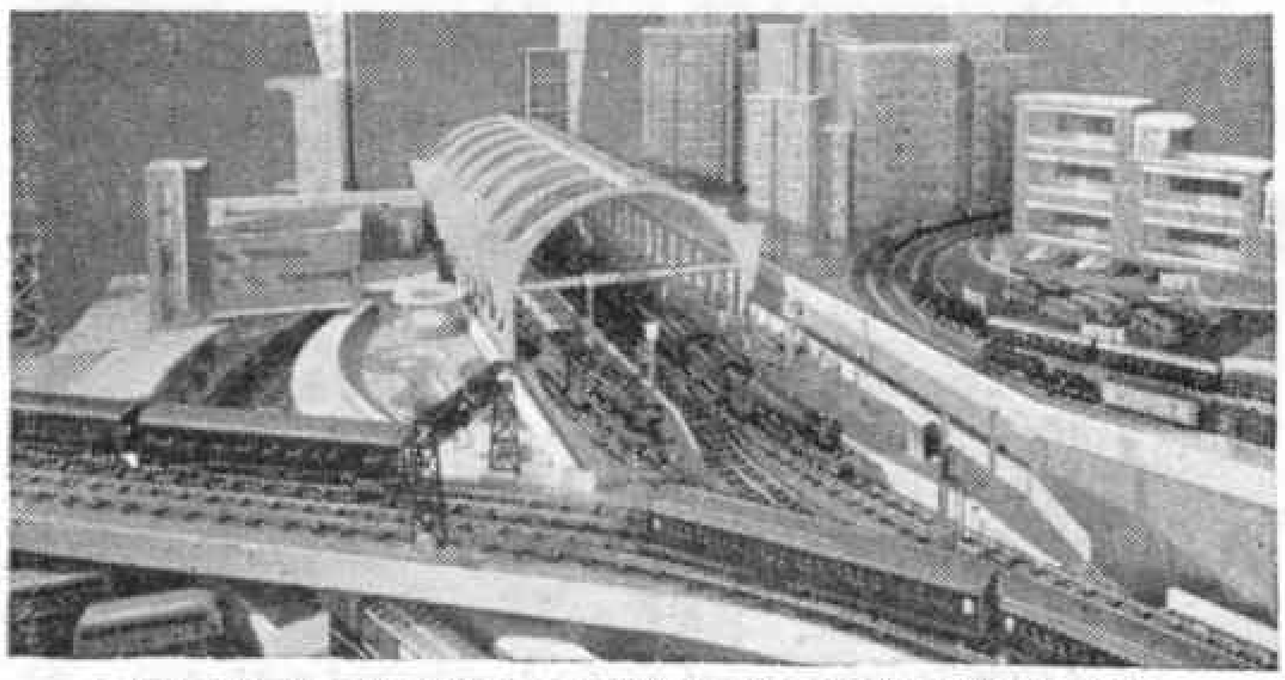

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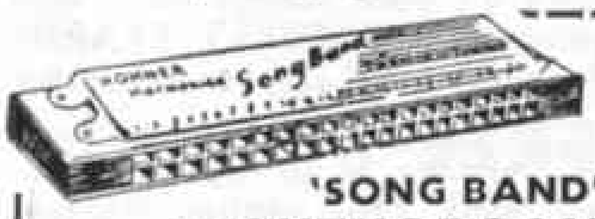

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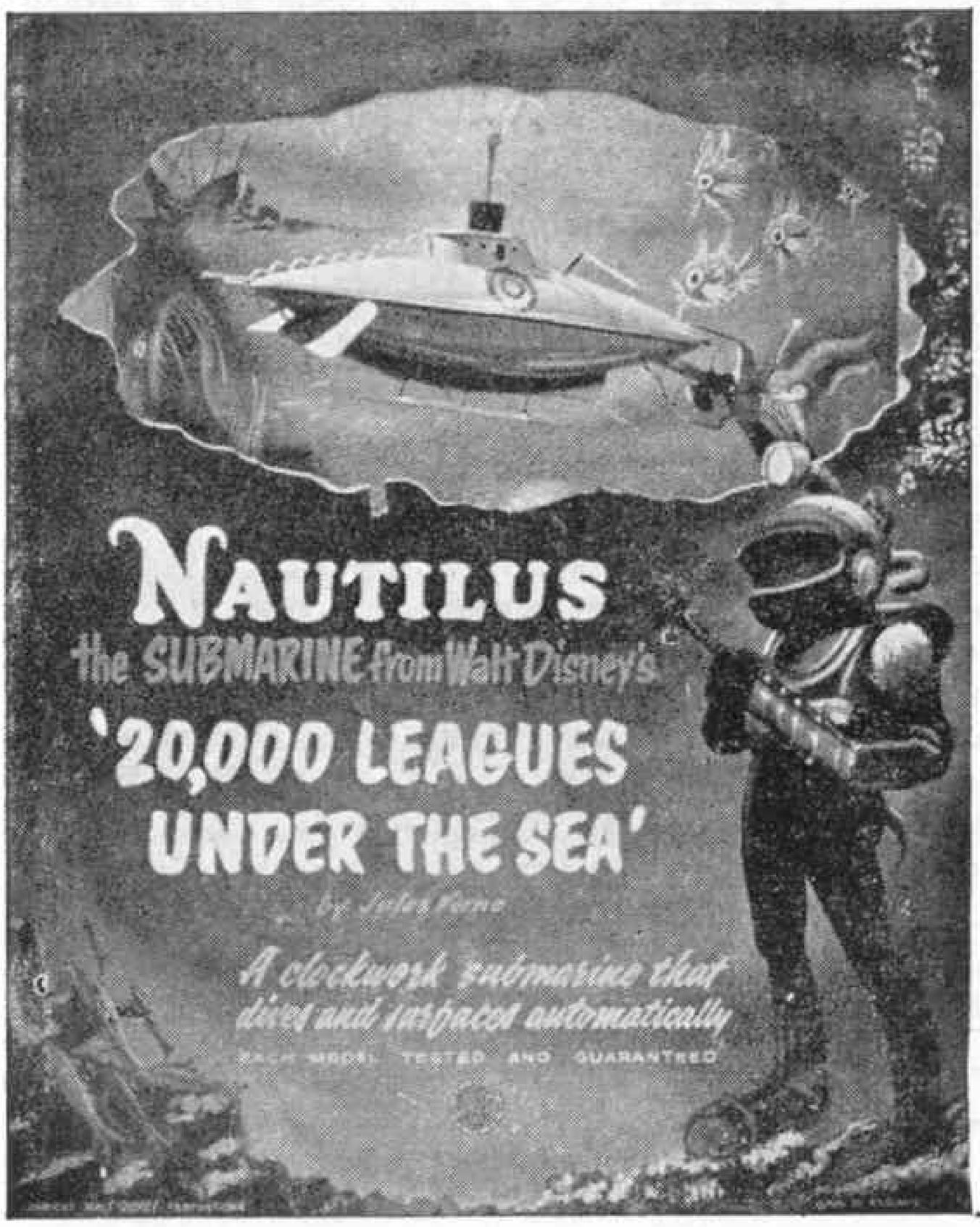

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(a) an early form of bicycle, (b) a three-wheeled car, (c) a type of paddle-steamer?

3 *Can rubber tyres conduct electricity?*

4 *Who was the first monarch to fly to claim a throne?*

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(c) King Paul of the Hellenes?

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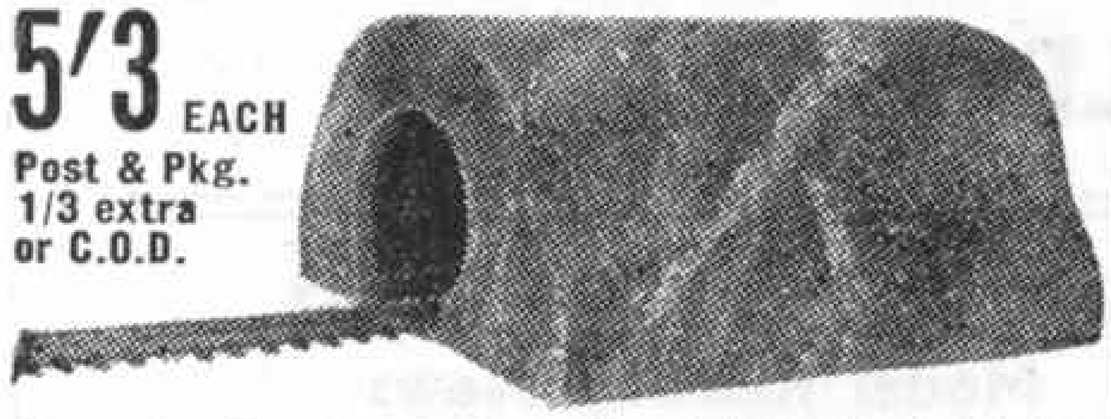

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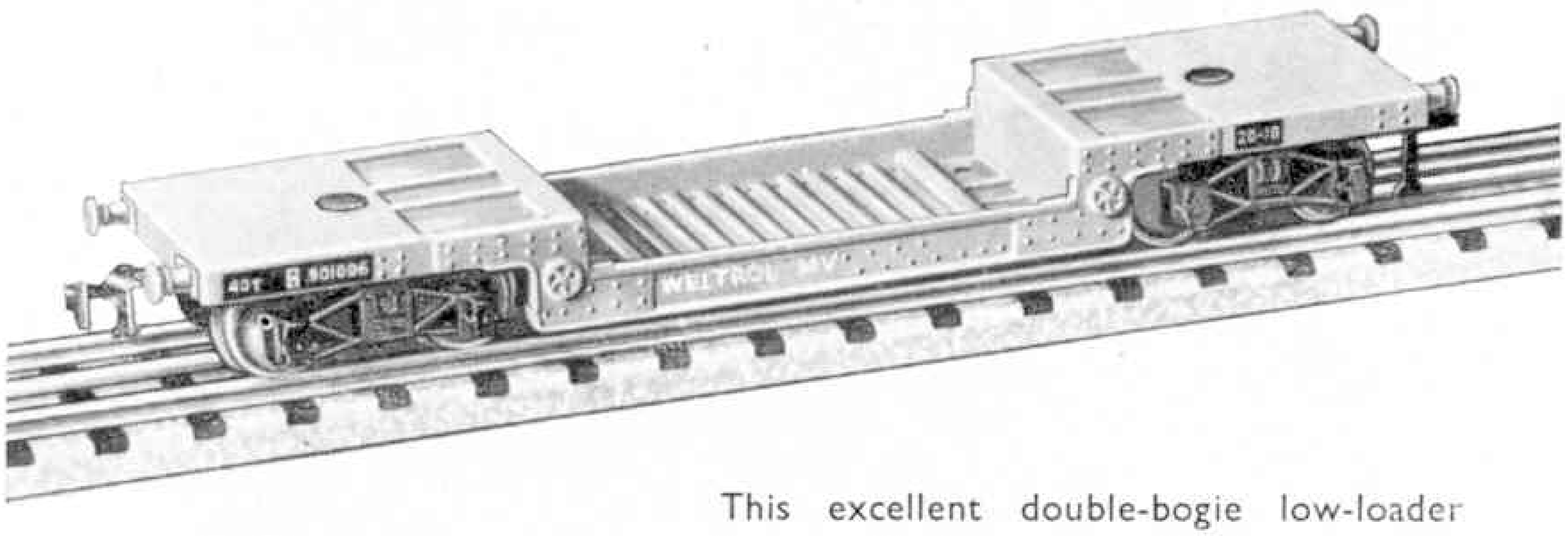

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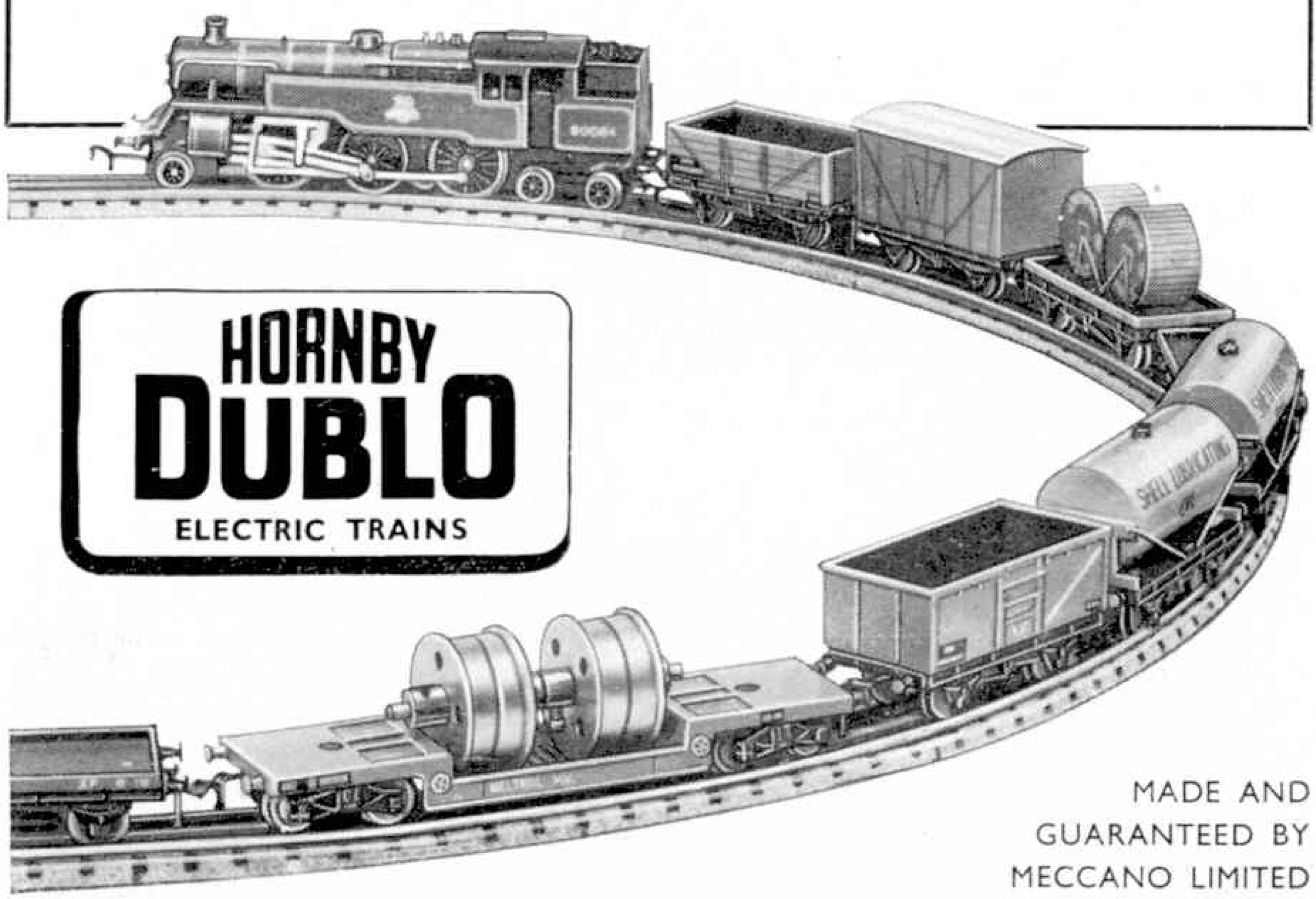

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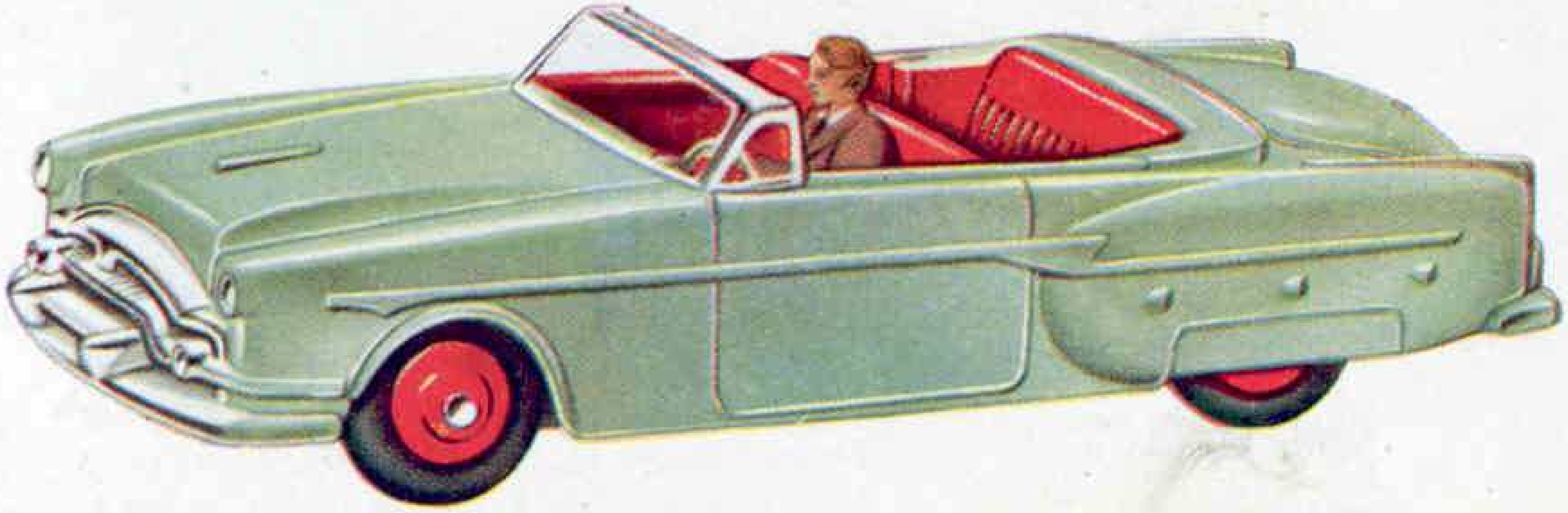

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